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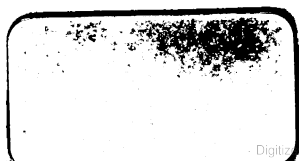
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THE CHEMIST'S DESK COMPANION FOR 1865.

THE YEAR-BOOK OF PHARMACY:

A PRACTICAL SUMMARY OF RESEARCHES IN
PHARMACY, MATERIA MEDICA, AND PHARMA-
CEUTICAL CHEMISTRY,

DURING THE YEAR 1864.

EDITED BY

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1865.

INTRODUCTION.

IN France, Germany, and America, various annuals, giving a summary of the progress and researches in Pharmacy, have for many years regularly appeared. The usefulness of these various compendiums is indicated by their large circulation. No such work, however, has hitherto existed in this country. The present volume is an attempt to supply this deficiency.

The 'Year-Book of Pharmacy' is intended to furnish the pharmacist with a concise abstract of all important papers bearing on pharmacy which have appeared during the past year, giving at the same time as full references as possible to the original sources of information.

The aim of the Editors has been to render the book as practical as possible; they have therefore been compelled to omit all notice of scientific and analytical chemistry.

A list of new chemical and pharmaceutical works, published during the year, is appended; want of space has prevented the Editors from giving any analysis of their contents. Should the present effort, however, prove successful, an endeavour will be made to render the succeeding 'Year Books' more complete in this and other respects.

January, 1865.

THE YEAR-BOOK OF PHARMACY.

PHARMACY, POLITICAL AND SOCIAL, DURING 1864.

THE great object for which the Pharmaceutical Society was originally established seems to be approaching realization. We earnestly hope that next year we may have to record its accomplishment. During the past session the Medical Council introduced into Parliament a Bill containing several clauses which vitally affected the cause of English pharmacy. That Bill was withdrawn. But its existence was a sufficient source of gratification to pharmacutists, for it proved that the leading men in the medical profession recognized the necessity for imposing some educational qualification upon all those who trade in medicines.

The Bill of the Medical Council did not make sufficient allowance for existing interests. The Society of Chemists and Druggists prepared to offer strong resistance to its progress, and the Pharmaceutical Society did not give it unconditional support. After the withdrawal of that Bill, however, all branches of the trade were impressed with the necessity for themselves taking such steps as should lead to a settlement of the question. The time seemed peculiarly favourable to such an attempt. That the Medical Council was earnest in its wish for legislation was evidenced by the following resolution, which was passed by them on the 7th of May:—"That a communication be addressed to the Secretary of State for the Home Department, drawing his attention to the present defective state of the law

regarding the Practice of Pharmacy, under which any person, however ignorant, may undertake it; and expressing the opinion of the General Medical Council, that some legislative enactment is urgently called for to ensure competency in persons keeping open shops for dispensing medicines and for the compounding of Physicians' and Surgeons' prescriptions." That the Medical Council was also friendly to the Pharmaceutical Society was apparent from the manner in which they had recognized it on several occasions. With such powerful support as this, it was probable that the Government would not be unfavourable to an amended Pharmacy Act, especially as the passing of such a measure would tend to a great extent to settle the question of the sale of poisons, which had already given them so much trouble.

Accordingly a memorial, bearing a large number of most influential signatures, was sent to the Council of the Pharmaceutical Society, asking for a general meeting to consider the question. That meeting was held, and it was ultimately resolved to introduce a Bill in the next session of Parliament. A Bill was drawn up by the Council in accordance with the views of that meeting, and received the assent of the members at the anniversary meeting in May. This is the Bill which is now before the whole trade, and for which their support is asked in the next session of Parliament. The following is an abstract of its provisions:—

Clause 1. After January 1, 1866, no person shall commence business as a chemist and druggist for the dispensing of prescriptions of medical practitioners without having passed an examination. The rights of all chemists and druggists in business at that date are reserved by registration.

Clause 2. Examiners appointed under Pharmacy Act to be examiners under this Act.

Clause 3. Registrar appointed under Pharmacy Act to be registrar under this Act.

Clause 4. Chemists and druggists in business before January 1, 1866, to be registered as such on payment of a sum not exceeding one guinea.

Clause 5. Assistants twenty-one years of age making application before January 1, 1866, shall be registered on payment of 5s. as 'Assistants' under Pharmacy Act.

Clause 6. All persons registered as assistants are, on commencing business, entitled to be registered as chemists and druggists on payment of the ordinary fee (not exceeding one guinea).

Clauses 8, 9, 10, 11, 12. Provisions for making, keeping, and publishing registers. Also penalties for wilful falsification of register or fraudulent representations to obtain registration.

Clauses 13, 14, 15. Penalties for infringement of this Act, and their application.

Clause 16. Persons registered as chemists and druggists, who have passed the minor examination, may be elected "Associates" of the Pharmaceutical Society, and use that title; may vote at, and take part in the proceedings of the Society at its general and special meetings in the same manner as members.

Clause 17 saves rights of medical practitioners.

Clause 18 extends the application of the Benevolent Fund, now available for members and associates of the Pharmaceutical Society only, and their widows and orphans, to all who shall hereafter be registered as chemists and druggists under this Act, whether members or not.

The United Society of Chemists and Druggists also commenced an agitation in favour of legislation. They advocated, however, a system of licensing retailers of medicines which should be independent of the Pharmaceutical Society. A Bill was drawn up by them, and has been published in the 'Chemist and Druggist.' We have not seen any authorized abstract of its provisions, but its essential points appear to be as follows:—All retailers of drugs and poisons, and their assistants and apprentices, at present in business, to be registered. All persons commencing such business after the passing of the Act to undergo examination before registration. No unregistered person to be competent to recover debt for the dispensing of medicines, or retailing of drugs and poisons. All registered persons in business as principals to pay an annual fee of half-a-guinea. A council to be elected annually from the registered persons for carrying out the provisions of the Act. The council to appoint a registrar for keeping and publishing an annual register; the council also to appoint examiners, and hold examinations in various towns. An annual meeting of registered chemists and druggists to be held, at which trustees and treasurers are to be

appointed. All chemists and druggists to be exempt from serving on juries, and from the operation of Lord Campbell's Act; the drugs and chemicals enumerated as poisons to be kept in safety; a benevolent fund to be formed out of the moneys received.

It will be seen that as far as the protection of existing interests is concerned, there is little difference between these two bills.

In the discussion of these questions it is important to know how many individuals are concerned in the practice of pharmacy in this country. The 'Pharmaceutical Journal' has given some valuable quotations on this point from the census returns. It is there shown that in England and Wales there are 16,000 chemists and druggists of all sorts, including apprentices and assistants. The returns do not indicate what proportion of these are engaged in business on their own account; but it is shown that of the 16,000, there are only 12,638 of the ages of twenty years and upwards. From these facts, the editor of the above journal estimates the number of principals at 6000.*

Attention has been specially drawn during the past year to the heavy responsibility resting upon the pharmacist in the conduct of his business. A case was recently decided in the Liverpool Court of Assizes, in which an action was brought against Messrs. Clay and Abraham, of Liverpool, for having accidentally substituted strychnine for James's powder in a medicine prepared by an assistant at their establishment, through which mistake a Mr. Lingard met his death. The action was founded upon a law passed in 1846, known as Lord Campbell's Act, which provides compensation to the families of persons whose deaths may be caused by the wrongful act, neglect, or default of some person other than the deceased. It was proved that there was no want of knowledge in the dispenser, nor an absence of proper arrangements for securing accuracy in dispensing in the establishment. Although it was shown that no infallible remedy could be provided against accidents of this kind, and that the defendants had adopted all reasonable precautions, Messrs. Clay and Abraham

* Pharm. Journ. vol. v. p. 383.

were compelled to consent to a settlement involving the payment of £1500, in addition to heavy law expenses. The assistant also, who actually prepared the medicine, was committed by the coroner's jury for manslaughter, but at his trial was acquitted.

This case has excited the attention of pharmacutists, and reminded them of the risk they run in the performance of their duties as dispensers and retailers of medicines. Much sympathy has been shown towards those members of the profession who were the unfortunate means of attracting notice to the subject; and the discussion of the matter will probably result in a united effort to obtain some alteration in the law as it now stands.

An instance of a similar kind has also occurred in Manchester. A chemist supplied chlorate of potash and peroxide of manganese for the production of oxygen gas; the use of the mixture resulted in an explosion, which caused the death of two operators. At the coroner's inquiry it was proved that the peroxide of manganese was adulterated with some carbonaceous matter, and the chemist was consequently committed to take his trial for manslaughter. As the law now stands, the position of the chemist is doubly onerous; for every error committed he is liable, not only to be mulcted in his property, but also to be deprived of his personal liberty.

In reference to accidental poisoning, it has been thought important to consider how far carelessness and incompetency exist among dispensers, and to what extent facilities are given for the purchase of poisons for criminal purposes. Dr. Taylor was authorized by Government to draw up a report on poisoning, and the dispensing, vending, and keeping of poisons. This report is very lengthy, and contains references to many cases, both of accidental and intentional poisoning; but the general conclusions which may be arrived at from it are, "that a large number of persons wholly unacquainted with the properties of powerful drugs and medicines are allowed to retail them to the public, on demand, without check or control," and that certain restrictions should therefore be placed on the sale and purchase of poisons. He recommends that the retailer should, in every instance, be a

qualified person, who has passed an examination at some recognized board. The whole tenor of the report is in favour of education on the part of the retailer, and the adoption of stringent measures for the purpose of separating dangerous from harmless substances, as the means by which fatal accidents may be best prevented.

The question, on its broadest basis, has often been discussed by pharmacæutists, and it still remains a subject for serious reflection.

The appearance of the 'British Pharmacopœia' has been to pharmacy the most memorable event of the past year. This book had been long looked for with eager interest by all branches of the medical profession. Its construction having been undertaken for the first time by a newly-constituted authority, representing the united medical talent of the whole kingdom, great curiosity was felt for the result. The long delay, moreover, which took place in its production, only served to increase this interest. It had scarcely been offered for sale, however, before a host of critics began to express their disappointment. No one appeared satisfied; even the compilers seemed, in their individual capacity, inclined to find some fault; and from all quarters came partial condemnation. Undoubtedly this might, to a certain extent, have been anticipated. So many conflicting interests had to be reconciled, and so many radical changes to be effected in its compilation, that a certain amount of dissatisfaction was but natural. Prolonged expectation also probably led to somewhat exaggerated criticism. Nevertheless, it must be admitted that the work contains many faults which ought not to have emanated from such an illustrious staff of editors.

Apart from all errors, the very fact that a '*British Pharmacopœia*' has been published must be regarded as matter for congratulation among the members of the medical and pharmaceutical professions. It sweeps away for ever those serious evils which resulted from the existence of three different standards in one kingdom for the preparation of medicines.

It is fair to assume that the production of successive editions will become a far easier task, admitting of greater accuracy in the practical details of the work.

The Pharmaceutical Conference, which was established in 1863, held its first ordinary meeting for the reading of papers at Bath, in September of the year. The result was highly successful. Mr. H. Deane was President, and delivered an admirable introductory address. A committee, composed of Messrs. King, Marsh, Kent, and Merrikin, gave an elaborate report on the subject of the prevention of accidental poisoning.* Mr. Barnard S. Procter reported on the weights and measures used in pharmacy.† A number of valuable communications on various subjects were also read, of which we have given abstracts. The success of the Conference fully demonstrates that English pharmacutists are able and willing to devote themselves to original investigations involving high scientific attainments.

It must be remembered that this Conference is an association perfectly independent of the Pharmaceutical Society. The latter body holds monthly meetings for the reading and discussion of papers relating to the science and art of pharmacy; we trust that the existence of the Pharmaceutical Conference will prove a stimulus to these meetings, and that the scientific labours of pharmacutists will not be allowed to wholly flow into another channel.

* Pharm. Journ. vol. vi. p. 158.

† Ib. p. 153.

MATERIA MEDICA.

A New Kind of Matico. (Bentley.)

Professor Bentley gave a description of a new kind of Matico, recently introduced into English commerce, in a paper read at the pharmaceutical meeting last January. The natural history of Matico is of especial interest to the pharmacist at the present time, in consequence of the introduction of this drug into the British Pharmacopœia. Matico is there described as the produce of the *Artanthe elongata* of Miquel; the dried leaves, as imported from Peru, being officinal.

In North America, Matico has lately been much employed, and extolled for its power of arresting internal hæmorrhage; it has also been introduced into the new United States Pharmacopœia. In consequence of the increased demand for Matico, especially in America, it has risen very greatly in price.

Probably this circumstance has led to the large importation, which has lately taken place, of the leaves of another plant under the name of Matico, and which have been offered for sale by highly respectable brokers as such.

The nature of these leaves has been very carefully studied by Professor Bentley, and he finds that they are derived from a plant very closely allied to true Matico; namely, the *Artanthe adunca*, Miq. As imported, this new kind of Matico consists of dried, more or less broken, loosely aggregated, fibrous leaves, together with a very few flower-spikes, and small fragments of branches. It has a greenish colour; a strong, aromatic, and somewhat pungent odour, in some respects resembling that of

true Matico; and an aromatic, spicy taste. The leaves are four, five, or more inches in length, and from one and a half to two and a half in breadth. They are oblong in form, entire at the margins, acuminate pointed, and somewhat unequal, and more or less rounded at the base. Their upper surface is dark green, and commonly more or less rough, although in some specimens they are nearly smooth; they are without hairs, and have from four to six somewhat sunken veins, arising alternately on each side of the midrib, passing in a parallel direction, and ultimately terminating at the margins of the leaf. Towards the base are several other smaller veins, which pass at once to the margins. The under surface is pale-green with prominent light-coloured veins. There are commonly no hairs between the ramifications of the veins, but the veins themselves are usually more or less pubescent.

The new kind of Matico may be at once distinguished from the officinal kind, by the leaves etc. being in a less compressed state; by their more fibrous nature, which makes them more difficult to reduce to powder; by their upper surface not being so tessellated or rough; and generally, by the almost entire absence on the under surface of pubescence, and in all cases, far less pubescent character. Hence the tessellated upper surface, and very pubescent character of the lower surface of the leaves constituting true Matico, are at once sufficient to distinguish them from the leaves of the new kind of Matico.

Professor Bentley gave the results of a superficial examination into the chemical characters of this new drug: he found it to be identical in this respect with true Matico.

The active constituents of both kinds appear to be the essential oil and a resin; there is no evidence of the presence of any principles analogous to piperin or cubebin.

The medicinal properties of this new Matico are probably identical, at least when administered internally, with the true kind. When applied externally to arrest hæmorrhage, it would doubtless be somewhat less powerful, as its structure would not act mechanically to the same extent. The plant yielding it pos-

sesses a considerable reputation for its medicinal properties, in the different districts in which it is a native.

The genus *Artanthe* belongs to the Natural Order *Piperaceæ*, and includes nearly two hundred species. The *Artanthe adunca* is the *Piper aduncum* of Linnæus. In common language it is known under the names of Hooked-spiked Pepper and Spanish Elder. It has a wide geographical distribution throughout the tropical regions of America. (Pharm. Journ. vol. v. p. 290.)

Ruspini's Styptic. (Squire.)

Mr. Squire, in some remarks following the reading of Professor Bentley's paper on 'Matico,' said that he had been making an examination of Ruspini's Styptic, and he was especially struck by the similarity of odour displayed by that preparation and the oil obtained from the new kind of matico.

He added, that he could find no indication of the presence of gallic acid in Ruspini's preparation; upon examining, at the same time, several samples of matico, he was struck by the fact of the entire absence in them of tannic and gallic acids. (Pharm. Journ. vol. v. p. 297.)

Cassia Moschata. Small American Cassia. (Hanbury.)

Many years ago, M. Henry, of Paris, published a notice of a sort of Cassia which had been imported from America, and had then newly appeared in French commerce. This drug bore a close resemblance to *Cassia fistula*, differing from it principally in its smaller size, pale-coloured, somewhat astringent pulp, thinner septa, and in the legume being attenuated into a point at either extremity. M. Henry contrasted it with *Cassia fistula*, and showed the two to be very similar in properties and composition.

Mr. D. Hanbury, F.L.S., having received, through Mr. Morson, specimens of this small variety of Cassia from New Granada, has been enabled to identify it as the produce of the *Cassia moschata*.

This plant, the *Cassia moschata*, was discovered by Humboldt and Bonpland on the shores of the Magdalena in New Granada, and described by them. No specimens, however, were sent to Europe, and the plant remained very imperfectly known. Mr. Hanbury, however, recently received from Panama some excellent flowering specimens, and has given a description of the plant, together with a figure, to the Linnean Society.

M. Triana states that the legumes of *Cassia moschata* are used in New Granada in place of *Cassia fistula*. (Pharm. Journ. vol. v. p. 348.)

**New Test for Castor Oil, Balsam of Copaiba, etc.
Cohesion Figures. (Tomlinson.)**

Mr. Tomlinson has applied the results of a valuable research on the cohesion figures of liquids, to the practical verification of several liquid bodies, otherwise very difficult of identification, such as Castor Oil, Copaiba, Creasote, Carbolic Acid, Volatile Oils, etc.

If a drop of an oil hanging from the end of a glass rod, be gently deposited upon the surface of clean water, contained in a chemically clean glass, a contest takes place between the forces of cohesion, adhesion, and diffusion, at the moment the drop flattens down by its gravity upon the surface of the water. The adhesion of the liquid surface tends to spread out the drop into a film, the cohesive force of the particles of the drop strives to prevent that extension, and the resultant of these two forces is *a figure which is definite for every independent liquid*. The figure thus produced is named the *cohesion figure* of the liquid in question. As the cohesion figure of a liquid depends so much on the adhesion of the surface, it is quite necessary that that surface be chemically clean. The water need not be distilled, but the vessel must be specially prepared. The glasses used should be about four inches in diameter at the mouth, and should be reserved exclusively for these experiments. They should be washed out occasionally with sulphuric acid, and well rinsed with water. After every experiment the glass should be washed out

with caustic potash, and well washed with water before filling up again; but *not wiped*. The glass rods kept for the purpose should be of the same size, and may be kept in the potash vessel. When one is taken out, it should be shaken in water and wiped dry on a clean cloth. On dipping it into the oil, etc., it may be stirred round and then allowed to drain until the drops fall slowly; the eye must determine when the rod is to be carried over the water, so as to deposit one, and only one drop, neatly and gently without any disturbance.

In the case of fixed oils it is of no use placing a second drop after the first one has failed; with ethers, alcohol, etc., it is different, each drop forming a sharp and well-defined figure which lasts only about a second.

True Creasote. A drop placed on the surface of two ounces of water forms a highly characteristic figure, sailing about with a vibratory, crispating edge. In the course of seven minutes this drop is disposed of by solution; that is, its cohesion is completely overcome by the adhesion of the water, and diffusion spreads it through the mass. A second drop may then be placed on the same surface. It exhibits the character of the first figure in a mitigated form; it is less active; it is dissolved in 12½ minutes; a third drop disappears in 25 minutes; a fourth drop ceases to give a cohesion figure at all. In fact the 2 ounces of water are saturated; that is, the adhesive force of the water and the diffusibility of the creasote are destroyed.

Carbolic Acid gives a very different figure from creasote, and its duration is very much less.

Castor Oil. Allow a single drop to descend gently near to the surface of clean water, and the result will be a figure of extraordinary beauty. The drop will flatten into a disk, from which there will proceed a number of perfect iridescent rings, showing most of the colours in Newton's seven series; but beyond, and bounding these rainbows, is a broad silvery corona of exquisite delicacy, which almost immediately breaks up into a charming lace-like pattern. These effects last some seconds, but gradually the colour disappears, the lace-like pattern follows, and a large

colourless disk with a well-defined edge is left on the surface of the water. It undergoes some change, but remains permanent for hours. The test is best applied at about 60° F.

Admixture of Oils. Regarding this most important question, Mr. Tomlinson states that in all the cases of admixture which he has examined, the features of the two oils are manifest in the cohesion figure; and these are in general very distinct if the standard figure be examined by the side of the suspected one. Thus, olive oil has its cohesion figure; oil of sesame, with which it is often mixed, has quite another figure; a mixture of the two in various proportions will give a figure which is neither that of olive oil nor of sesame, but giving the characters of both, leaning of course to the side of that which is in excess. In some cases, however, the characters of the added oil do not at once appear, and this is the case when lard oil is added to castor. The figure opens in the same beautiful manner, and goes through its lovely phases, with a difference it is certain, that requires a practised eye to detect; but there is no difficulty in detecting the lard oil among the residual phenomena of the experiment. Outside and beyond the castor-oil figure, we have numerous small blotches of lard oil, which are entirely absent from the residue of the pure castor-oil figure.

Croton Oil furnishes a magnificent cohesion-figure which may be represented as a very enlarged pattern of that of castor oil. There would probably be no difficulty in detecting 5 per cent. of croton oil in castor oil.

Oil of Turpentine forms a very characteristic figure. It flashes out into a large well-defined film, the edge is marked by a double row of small bosses, the outer being the smaller; in the course of a few minutes irregular patches of iridescent colour appear on the surface, the film then becomes perforated by a multitude of minute holes, and the fourth and final stage is an exceedingly delicate resinous network which is very permanent.

Balsam of Copaiba gives a figure which consists of a succession of sharply cut, expanding, superposed disks, glowing with the most brilliant iridescent colours, of a lustre all but metallic.

These disappear when the adhesion of the surface is satisfied, and a clean, sharply defined, colourless disk is left on the surface. (Pharm. Journ. vol. v. p. 387.)

**On the Relative Activity of American and European
Aconite Root. (Procter.)**

At a meeting of the American Pharmaceutical Association, held in September, 1862, Professor Procter accepted the query, "What is the relative activity of the root of *Aconitum Napellus* grown in the United States and that imported from Europe, based on their yield of aconitia; and what objections, if any, exist to the economical culture of the plant in the United States?"

The following are the results of experiments made on roots grown by Messrs. Tilden, of New York, and another sample imported from Germany:—

5000 grains of powdered root were taken in each instance.

The American root yielded 21 grains of the pure alkaloid.

The German root yielded only 10 grains of pure aconitia.

From the experiments made, Professor Procter came to the conclusion that, as a rule, American Aconite Root yielded at least twice the quantity of the alkaloid as compared with the roots imported from Europe. (Amer. Journ. Pharm. vol. xxxv. p. 5.)

On the Manufacture of Balsam of Peru. (Hanbury.)

Mr. D. Hanbury, F.L.S., has shown:—

1. That Balsam of Peru has been always a production of Guatemala, or rather of that part of it which is now called Salvador.

2. That the tree which yields it is the *Myroxylon Pereira* of Klotzsch.

3. That it acquired the name of Balsam of Peru solely from the circumstance of it being transported to Europe by way of Peru.

In a second paper he quotes from the early writers on Central

America, several passages confirmatory of the above opinions.
(Pharm. Journ. vol. v. p. 315.)

Balsam of Peru. (Attfield.)

Dr. Attfield having obtained from Mr. Hanbury a small branch of *Myroxylon Pereiræ*, and also a section of the trunk of the tree from the Pharmaceutical Society's museum, endeavoured to obtain balsam from them by the process usually adopted, namely, by the action of heat. No exudation was obtained in either case, nor was any odour emitted at all resembling that of Balsam of Peru.

The characteristic constituents of Balsam of Peru being soluble in ether, portions of the specimens were extracted by that liquid. By this means a soft resin was obtained, which, however, was found to be quite distinct from the resin of the Balsam. No volatile oil or cinnamic acid could be detected.
(Pharm. Journ. vol. vi. p. 204.)

On *Myroxylon Toluiferum*, and the Mode of Procuring the Balsam of Tolu. (Weir.)

Mr. Weir gives an account of a journey he undertook for the purpose of making inquiries respecting the Balsam of Tolu tree. He sailed up the Magdalena with a view of reaching the country in which the *Myroxylon* was found, but failed in discovering any of the trees. He afterwards went to Las Mercedes, and found there some of the balsam stored, and was told that he would meet with the trees at Plato; and on reaching that place found that the trees were very plentiful in its vicinity.

He then describes the mode by which the balsam is obtained.
(Pharm. Journ. vol. vi. p. 60.)

Cultivation of Cinchona.

Several articles have appeared during the past year in the 'Pharmaceutical Journal' on the cultivation of the Cinchonas.

An interesting account of the plantation in Jamaica is given at p. 512, vol. v., taken from the 'Jamaica Guardian.' Some leaves from the *Cinchona succirubra*, or red bark, and *C. micrantha* and *C. nitida*, or grey barks, which had been under cultivation there for two years, were examined by Dr. Daniell, and very favourable results obtained.

Dr. Thwaites, F.L.S., has furnished a report* on the Cinchona cultivation in Ceylon, which is being carried out, under the direction of Mr. M'Nicoll, with very great success. Statistics are given of all the plants now under cultivation there, showing that a large stock of healthy plants is now existing, from which propagation may go on rapidly.

Mr. M'Ivor, the superintendent of the Government plantation on the slopes of the Neilgherries in the Madras Presidency, has forwarded specimens of the bark and leaves of the different species of Cinchonas under cultivation there to Mr. J. E. Howard, F.L.S., for analysis. A report† from him on the subject has been published, from which it results that, although the leaves contain quinine, it is present in such small quantity as not to be worth extraction. The red bark, of a second year's growth, furnished a very fair percentage of alkaloids. The general conclusion appears to be very favourable.

Dr. J. E. de Vry also read a paper at the pharmaceutical meeting in May, on the Cinchonas reared in India. He regarded very favourably the method of cultivation which Mr. M'Ivor has adopted. This system consists in propagating by cuttings and layers, and not by seeds; and in growing the plants *without shade*. Mr. Junghuhn, the superintendent of the Dutch plantation in Java, proceeds on the opposite principle, and rears the plants in the dense shade of the virgin forests.

Dr. de Vry collected a number of specimens from the different species, both in Ceylon and Madras, and the results of his analyses are given in the form of a table. The most remarkable fact has reference to a specimen of red bark thickened by moss; it yielded 8·4 per cent. of alkaloids. Dr. de Vry states:—

* Pharm. Journ. vol. v. p. 515.

† Ib. p. 368.

“I must still point out the fact that the roots of *all* species of *Cinchona* which I have investigated, contain a greater amount of alkaloids in their bark than is contained in the bark of the stem. My attention was first fixed on this fact by repeated investigations of *C. Pahudiana*. I enter upon no speculation whatever, but must persist in maintaining the fact, which seems not only to be true in British India and in Java, but likewise in South America, for the bark of the root of *C. lancifolia*, which my friend Mr. A. Delondre forwarded to me, contained not less than 8·66 per cent. of alkaloids.”

(On this question Dr. de Vry is at direct variance with Mr. Howard, who regards the root-bark as decidedly inferior. The practice of collecting the root-bark has been reprehended as likely to lead to the extirpation of the plant. Dr. de Vry, however, considers that the plants can be multiplied to such an extent as to justify their growth solely for the sake of the roots.)

Dr. de Vry concludes thus:—

“I arrive at the conclusion that the introduction of the valuable species of *Cinchona* into British India has been completely successful, and that nothing is now wanted but a continuance of skilful observation and experiments, in order to make such introduction as lucrative in a commercial, as it is interesting in a scientific point of view.”

Dr. de Vry,* in another paper, also gives the results of a very elaborate series of analyses of the stem and root-barks of the three species of *Cinchona* under cultivation by the Dutch in Java; namely, the *C. Calisaya*, *C. lancifolia*, and the *C. Pahudiana*.

He concludes from his inquiry that the *Calisaya* will probably produce the best results, if properly managed. The *lancifolia* also yields very satisfactory results. The amount of alkaloid in the *stem bark* of *Pahudiana* is much smaller than that in the bark of any other species in Dutch or British India yet examined. The *root-bark* of this species, however, yields a larger quantity.

* Pharm. Journ. vol. vi. p. 16.

The root-barks of the other species are decidedly inferior to the stem-barks.

The *Pahudiana*, when cultivated in the open sunshine, yields a bark of average thickness; but when grown under dense shade the bark is so thin that it cannot be removed from the stem.

On the Root Bark of Cinchona Calisaya. (Howard.)

Mr. J. E. Howard, F.L.S., has directed attention to the presence of an unprecedented amount of Root Bark in the recent importations of the finest Calisaya Bark from Bolivia. It is readily distinguished by its peculiar character, especially its *curly* shape. Upon analysis he found that this Root Bark yielded of purified alkaloids only 8.14 parts from 1000. Of this not more than 3.06 parts were obtained as a crystalline salt of quinine; the remainder consisted almost entirely of the quinidine of Pasteur (crystallizing as a hydriodate).

Mr. Howard appears inclined to think that, during the descent of the sap to the roots, the quinine becomes converted into quinidine.

Mr. Howard conceives the existence, in the heartwood of the plant, of a "mother substance" which is carried up by the sap to the leaves, and there, under the influence of ammonia, commences to give rise to the production of the alkaloids and two or three other substances, especially the Cinchona red; the action thus commencing in the leaves, being continued during the descent of the sap in the bark. (Pharm. Journ. vol. v. p. 342.)

In a second communication (p. 19, vol. vi.), Mr. Howard reprobates the practice of collecting the Root Bark, which would lead to the gradual extinction of the Cinchona plant. He quotes from a letter received by him from a gentleman at New Granada, which states that the barbarous method of pulling up the roots is only practised in the forests of Pitayo; and that in the other districts, on the contrary, beneficial rules are observed for the conservancy of the woods. These consist in leaving a part of the trunk, about three feet in height, whence shoots may sprout;

and in clearing away the surrounding trees to enable the rays of the sun to penetrate. By this means, most of the trees that are cut down quickly shoot up, and the sun's rays reaching the clear ground, the seeds which fall from the tree germinate freely.

Mr. Howard is of opinion that the Root Bark generally is very inferior to the stem bark; at any rate, it is so in the case of *C. Calisaya*.

The Red Variety of Pitayo Bark. (Howard.)

Mr. J. E. Howard having received some authenticated specimens of the bark of *Cinchona Pitayensis*, submitted a portion to analysis, and obtained the surprising amount of 8·6 per cent. of alkaloid soluble in ether. He states that this bark bears a high value in the market, and is considered equal to *Calisaya*.

Mr. Howard believes this bark to be identical with that given to Dr. de Vry by M. Delondre, and described as the root-bark of *C. lancifolia*. He then shows that it cannot be root-bark, although it may contain a portion; and that the *Cinchona Pitayensis* is botanically quite distinct from the *Cinchona lancifolia*. (Pharm. Journ. vol. vi. p. 49.)

On the Use of Quinovic Acid (*Cinchona Bitter*) in Medicine. (De Vry.)

Several circumstances led Dr. de Vry to suspect that the tonic properties of some preparations of bark might be at least partially ascribed to Quinovic Acid. He therefore prepared a quantity of this acid, and had it tried in a large number of cases in the hospitals of Dutch India. One report states:—"The application of Quinovic Acid in diarrhoea and dysentery was made in consequence of the observation of its physiological action in diminishing the secretion of the intestines, which was attributed to a diminution of the peristaltic motion. In this aspect, also, the results are very satisfactory; and it is therefore a new property of the Quinovic Acid discovered, which agrees with the tonic properties which have been ascribed to it by Dr. de Vry."

Dr. de Vry, therefore, ventures to suggest the use of cinchona leaves in British India against jungle fever, which is in many districts a real plague. If the leaves are collected in the different cinchona plantations, which can be done without great cost, a tincture could be prepared from them with proof spirit, in which menstruum Quinovic Acid is easily dissolved, but not chlorophyll and some other inactive substances. (Pharm. Journ. vol. vi. p. 19.)

Tannin as a Substitute for Cinchona. (Leriche.)

Dr. Leriche states that pure Tannic Acid, properly administered, is an excellent antiperiodic. It possesses real efficacy in the treatment of all intermittent fevers of a simple quotidian type. A silver medal was awarded to Dr. Leriche by the Brussels Society of Medical Science for his memoir on this subject. (Journ. de Chim. Méd.)

The Toot Poison of New Zealand. (Lindsay.)

Dr. W. L. Lindsay describes the poisonous effects of the Toot plant, one of the commonest shrubs of New Zealand, among the flocks and herds of the settlers.

On man it produces coma, with or without delirium, great muscular excitement, loss of memory, and sometimes vertigo. On cattle and sheep it produces vertigo, staggering, and tremors. To man, the seed, which is contained in a dark purple, luscious berry, is generally the poisonous portion. Animals generally eat the young shoots. These bad effects are only produced when some predisposing cause exists, such as long fasting, exhaustion, etc.; animals may become habituated to the Toot plant, and then do not suffer at all. Moreover, harmless and agreeable wines and jellies are prepared from the berries of the plant.

The Toot plant is the *Coriaria ruscifolia*, L.; it is therefore allied to the *Coriaria myrtifolia*, which is familiar as the adulterant of senna. (Pharm. Journ. vol. v. p. 371.)

True Manna of the Hebrews. (Haidinger.)

Director Haidinger, of Vienna, exhibited at the Annual Meeting of the Association of German Naturalists and Physicians, a number of the *Parmelia esculenta*, which had fallen as Manna-rain, near Karput, in Asia Minor, in March, 1860. He expresses an opinion that this is the true Manna of the Jews. It is blown by the wind from the rocks, and thus he accounts for the Jewish record, that it fell from heaven. This lichen, when in a moist state, can be eaten by animals and men. Haidinger has published an account of this phenomenon in the Report of the Austrian Academy of Sciences. (Brit. Med. Journ.)

Goa Powder. (Kemp.)

Mr. Kemp has given an analysis of "Goa Powder," a substance found at Bombay, and used in the treatment of obstinate skin-diseases. It somewhat resembles Cudbear, and is apparently derived from Orchella weed. Nearly one-half is dissolved by Benzol, and the remainder is almost completely soluble in alkalis, forming a deep blood-red solution. (Pharm. Journ. vol. v. p. 345.)

Botanical Origin of Gamboge. (Hanbury.)

Mr. D. Hanbury, F.L.S., has succeeded in satisfactorily establishing the botanical origin of the Gamboge of Siam. He finds it to be a variety of the *Garcinia Morella*, differing only from the Ceylon type in having pedicellate instead of sessile flowers. He has given a description of the plant to the Linnean Society, under the name of *Garcinia Morella*, Desrouss., var. *pedicellata*. (Pharm. Journ. vol. vi. p. 349.)

On Blue Cohosh (*Caulophyllum thalictroides*). (Ebert.)

The root of the Blue Cohosh is much in use among the Eclectic practitioners of America, who obtain from it *Caulophyllin*. It is usually met with in the shops in a pressed state, as sent into the market by the Shakers.

Mr. Ebert, on examining parcels of the drug, found that every parcel contained the root of *Hydrastis canadensis* to the extent of one-third the whole quantity. On making experiments, Mr. Ebert found the following to be the constituents of the plant :—

Albumen.

Gum.

Starch.

Phosphoric Acid.

Extractive.

Resin, soluble in alcohol and insoluble in ether.

Resin, soluble in alcohol and ether.

Greenish-yellow colouring-matter.

A body analogous to saponin.

Salts of potash, magnesia, lime, iron, and silica.

(Amer. Journ. Pharm. vol. xxxvi. p. 203.)

Persian Insect Powder. (Hanamann.)

Heller and Kletznisky examined the floral heads of *Pyrethrum carneum* which had been collected on the Caucasus, and found a volatile oil and santonin as active principles, but no narcotic poison or alkaloid. Hanamann confirms this statement with the exception of the presence of santonin, which he was unable to detect. The volatile oil is of a pale-yellow colour, faint aromatic taste, but strong penetrating odour, resembling fresh chamomile flowers. It stupefies and kills insects. (Wittst. Viert. Schr. pp. 517-522.)

A New Falsification of Saffron. (Guibourt.)

M. Guibourt has recently examined a parcel of Saffron received from a house in Paris, and labelled "*Safran du Gatinais*," 30 per cent. of which consisted of a material supposed to be Saffron stamens. Professor Decaisne examined these, and found by the cylindrical form and rounded summit of their anthers that they were the stamens of *Crocus vernus*; the summit of the anthers in *Crocus sativus* being terminated like an arrow. They are

evidently collected intentionally, dyed artificially, and twisted so as to deceive the eye, and in quantity equal to nearly a half of the article sold as Saffron. The adulteration may be recognized by throwing a certain quantity into a glass of water. The stamens are instantly decolorized and float on the surface, while the true stigmata of *Crocus sativus* fall to the bottom. This Saffron was also found to contain small marigold petals, coloured red; these may be recognized by their longitudinal nervures and three-pointed terminations. (Journ. de Pharm. July, 1864.)

Poisonous Effects of the Oidium of the Vine. (Collin.)

M. Collin, in a communication to the French Academy of Medicine, relates three cases of persons, cutting vines affected with Oidium and getting a slight incision of the skin, in whom all the symptoms of true poisoning resulted. In a few days, shivering, loss of appetite, and fever with remissions set in. The cut soon assumed a bad aspect, become gangrenous, the limb itself being cedematous. The most remarkable circumstance was that the mouth became covered with *muguet*, which modern researches have shown to be a cryptogamous production, and which M. Gubler terms the Oidium of the mouth. M. Collin promises a communication of results of experiments upon the inoculation of animals with Oidium. (Med. Times, April 23, 1864.)

**Absence of Veratria from the Dead Stalks of
Veratrum viride.** (Maisch.)

Dr. Maisch, in examining one hundred pounds of the corms and root of this plant, found no Veratria in the dead stalks attached to them, and came to the conclusion that they contained no alkaloid, and that their careful removal is indispensable in making preparations from this plant. He found, however, a body analogous to saponin, which he promises to isolate. (Amer. Journ. Pharma: vol. xxxvi. p. 93.)

**Jacca or Paradise Nuts from *Artocarpus integrifolia*.
(Mayer.)**

Professor Mayer notices the importation to the United States of these nuts from the West Indies, where they are cultivated. He quotes Descourtilz, who states that the nuts both of *A. integrifolia* and *A. incisa* are used in Jamaica as a substitute for almonds in medicinal preparations; the emulsion of these seeds used in the place of almonds is said to be unchangeable, a desideratum in a warm climate. (Amer. Journ. Pharm. vol. xxxvi. p. 293.)

**On the Comparative Values of the Commercial Varieties of
Buchu Leaves. (Bedford.)**

The author made experiments with a view of furnishing an answer to the following query:—"What are the actual values of the commercial varieties of Buchu Leaves, based on the proportion of the volatile oil they yield?"

His experiments were confined to two varieties, long and short leaves; the long buchu, known as *Barosma serratifolia*, is the variety most esteemed, but experiments proved that it contains much less volatile oil than the *B. crenulata*, or short-leaved variety. The experiments were made on quantities varying from 9000 to 15,000 grains of the leaves. The long-leaved buchu yielded, at different times, 0.62, 0.63, 0.64, and 0.71 per cent., being an average of 0.66, or two-thirds of 1 per cent.

Similar experiments with the short-leaved buchu gave respectively 1.60, 1.16, 1.07, and 1.02 per cent., being an average of 1.21, or one and one-fifth per cent.

Brandes, in his analysis of buchu leaves, made in 1827, sets the amount of volatile oil at 0.86 per cent. Cadet de Gassicourt, who made an analysis in the same year, gives 0.665 per cent. The variety of buchu is not stated. (Amer. Journ. Pharm. vol. xxxvi. p. 129.)

Properties of the Pepo (Pumpkin) as a Vermifuge. (Ingals.)

Pepo was made officinal in the U. S. Pharmacopœia of 1860,

but for ten years before that had been used as a remedy for tapeworm. The seeds contain a fixed oil, which may be obtained from them by expression, and to this is said to be due their medicinal virtue. The dose of the oil is a fluid ounce, to be followed in two hours by an active cathartic; but it does not appear that the oil possesses any advantage over the seeds in substance.

Dr. Ingals thinks that the seeds have an advantage over other tæniifuge remedies in use, in being entirely harmless to the patient and not unpleasant to take, and also in the facility with which they may be obtained, and of a quality known to be good.

Among the formulæ will be found one for an emulsion of pumpkin seeds as recommended by Dr. Ingals. (Chicago Med. Journ.; Amer. Journ. Pharm. vol. xxxvi. p. 428.)

Supplementary Note on *Asafœtida*. (Cooke.)

Mr. M. C. Cooke communicates some additional information respecting *Asafœtida*, obtained from Dr. Bellew.

The *Asafœtida* of commerce is obtained from only one plant in Affghanistan, viz. *Narther Asafœtida*. There are several other plants resembling in appearance the *Asafœtida*, and exuding a gum resin, but these are never collected for the same purpose. The quantity of *Asafœtida* obtained from each root varies from a few ounces to a couple of pounds in weight, according to the size of the roots, some being no larger than a carrot, others being of the thickness of a man's leg. The quality of the gum differs much, and it is always adulterated on the spot by the collectors before it enters the market. The extent of adulteration varies from one-fifth to one-third; wheat or barley flour or powdered gypsum being the usual adulterants.

The *Asafœtida* is used by the Mahometan population of India as a condiment. The fresh leaves of the plant, when cooked, are also used. (Pharm. Journ. vol. vi. p. 583.)

Poisoning by Calabar Beans. (Edwards.)

Dr. Edwards narrates a case which occurred at Liverpool, in which about seventy children were poisoned by eating the beans of *Physostigma venenosum*, the quantity taken by each child being from half a bean to six beans. He arrives at the following conclusions :—

1. The bean is edible in poisonous quantities, and although slightly rough in its flavour, does not appear to excite disgust or alarm when eaten alone, and would be undiscovered when mixed with food.

2. The symptoms are not always immediate, nor is vomiting induced, except when the dose is excessive: nor would the secondary symptoms, viz. dizziness, faintness, and loss of power in the limbs excite sufficient alarm to call for medical assistance until life was really in immediate danger.

3. The symptoms would scarcely be distinguished from English cholera in time to save the life of the patient.

4. In criminal cases, nothing might be detected by autopsy or by chemical analysis to reveal the cause of death.

5. So insidious a poison should not only be stored, but also handled with great caution; its alcoholic solutions or extractive, when introduced into the circulation, acting as a slow but certain poison, leaving no trace in the body which can be identified by chemical tests in our present knowledge of the poison.

Detection of the Poison.—Dr. Edwards, in his evidence, gave the following as the means by which he detected the poison. He found that a watery solution of the ethereal extract of the bean gave the following reactions :—1. A pink colour struck by caustic potash, which gradually increases in intensity to a deep red, and is soluble in chloroform. 2. A red colour by strong sulphuric acid. 3. A violet colour, changing to red, by sulphuric acid and bichromate of potash. 4. A similar colour with sulphuric acid and binocide of manganese. 5. A yellow precipitate with solution of iodine in iodide of potassium. 6. A purple colour with terchloride of gold, and reduction of metallic

gold. 7. A yellow colour with caustic ammonia, which exposed for some hours turns green, and finally a deep blue.

Physiological Tests.—An aqueous emulsion of an ethereal extract obtained from the intestines of the deceased person was tested as above. A portion was also inserted under the skin of a frog. The animal ultimately became unable to jump, and insensible to any external irritation, and it soon expired.

A portion was also introduced into the circulation of a mouse by the ear, and operated fatally with complete paralysis of the limbs and senses. Another portion caused contraction in the pupil of the eye of a rabbit. (Pharm. Journ. vol. vi. pp. 99, 134.)

Report on Chloroform. (Medical and Chirurgical Society.)

A lengthy report on the therapeutical value and modes of administration of Chloroform has been laid before the Medical and Chirurgical Society by a committee appointed for the purpose.

From many experiments made, the committee came to the conclusions:—

That as an anæsthetic, Chloroform is a safer and more certain agent than Ether.

That a mixture of Ether and Chloroform is as effective as pure Chloroform, and a safer agent when deep and prolonged anæsthesia is to be induced. They recommend a mixture of three parts of Ether, two parts of Chloroform, and one part of Alcohol (by measure).

That it is very important that the utmost care should be observed in the administration of Chloroform.

That in surgical operations no preference can be given to Ether over Chloroform, while the latter may be used with safety. (Lancet, July 16, 1864.)

Hydrocyanic Acid in Bitter Cassava Root. (Daniell.)

That Hydrocyanic Acid exists in the root of the Bitter Cassava has been known for many years; and so far back as 1836

MM. Chalard and Henry made analyses, and arrived at the conclusion that the active or poisonous principle of this root depended exclusively on the presence of this acid. This was subsequently confirmed by Professor Christison. An experiment made by Mr. Hughes, of Kingston, Jamaica, was educed by Dr. Daniell as confirmatory evidence of the existence of Hydrocyanic Acid under certain conditions in Bitter Cassava Root. (Pharm. Journ. vol. vi. p. 304.)

On a Leech Destroyer. (Mumbray.)

Mr. Mumbray communicates an account of a rapid destruction of Leeches by a parasite. He compares it to a very small millepede or woodlouse, having long antennæ and numerous legs. On examination under a magnifying power of eight diameters, the whole intestinal canal was seen to be distended with blood; this entirely disappeared in the course of fifteen minutes, proving the rapidity of digestion and assimilation. The mouth was armed with a formidable pair of pincers, and the forelegs with hooked claws.

It has been suggested that this insect is the larva of the Nepa, a water-beetle, but its identity still remains a matter of doubt. (Pharm. Journ. vol. vi. p. 23.)

Aqueous Extract of the Liver of the Cod.

M. Despinoy, of Lille, examining the fluid which escaped during the fermentation of the cod-liver in the preparation of the oil, found it richer in the properties of the oil than the oil itself. He prepared an extract from the fluid, in order that it might be administered in the form of pills. M. Devergie recently reported to the Academy on the results obtained by several trials of these, made in the Paris hospitals. It was found that when the pills were given in great doses they caused anorexia, but given to young scrofulous subjects in moderate and prolonged doses, they improved the assimilatory powers very much, as is done by small doses of cod-liver oil; but in regard to their ulti-

mate effect upon the special symptom they were found very inferior in efficacy to the oil. Still, as a remedy in cases in which the cod-liver oil cannot be borne, as in chlorosis, anæmia, indigestion, and commencing phthisis, they may prove of great utility, it always being remembered that the same amount of therapeutical results is not to be obtained as from the oil. The mean dose of the pills is four per diem, commencing with one night and morning. M. Despinoy's researches prove that the peculiar active principle of cod-liver oil has yet to be sought for, as, while the watery extract is of less therapeutical power, it is richer in its proportions of propylamine, ichthyoglycene, iodine, phosphorus, etc. (Bull. de Thérap. vol. lxiii. p. 545.)

On Commercial Podophyllin. (Spearing.)

Mr. Spearing read a paper on this subject before the Pharmaceutical Conference.

After giving a short history of this drug, the author described the three processes usually followed in its preparation, and gave the results of an analytical examination of the product of each process. The method of the British Pharmacopœia was found to be the most economical and satisfactory of the three. He had examined twelve commercial specimens, and from the presence of alumina in five, inferred that they were prepared by the inefficient method of shaking the tincture with solution of alum; two contained iron, and one copper. (Pharm. Journ. vol. vi. p. 244.)

Volatile Oil of Matricaria Chamomilla. (Bizio.)

This oil is of a beautiful blue colour, congeals at 20°–24° F., turns green with diluted hydrochloric and nitric acids, reddish-yellow with concentrated sulphuric acid, yellowish-white and tough with chlorine. The boiling-point rises from 240° to 300° C., at which temperature the oil decomposes, leaving a resinous residue. It is little altered by fused potash. Distilled with anhydrous phosphoric acid, a nearly colourless oil is obtained,

having the odour of petroleum and the composition $C_{20}H_{16}$; the composition of the blue oil is $5 C_{20}H_{16} + 6 HO$. (Wittst. Viert. Schr. pp. 550.)

Expressed Oil of Nutmegs. (Rieker.)

The author believes that the commercial Oil of Nutmegs is either mixed with another fat or else nutmegs previously deprived of the volatile oil are used in its preparation. He obtained from 4 pounds of nutmegs, by two expressions between heated plates, $16\frac{1}{2}$ ounces of oil, the residue yielding only half a drachm of volatile oil and very little fat. The expressed oil is pale-yellow, not yellowish-red like the commercial oil, possesses a stronger odour, less fatty to the touch, with greater difficulty absorbed by paper, and solidifies much quicker after fusion, forming warty excrescences upon the surface. The sp. gr. of the expressed oil is .998, of the commercial .995. A solution of the expressed oil mixed with absolute alcohol and spontaneously evaporated, left microscopic crystals of the form of a cross. The commercial oil did not crystallize.

By expressing the oil as above, the author believes the saving to be 14 per cent. (N. Jahrb. d. Pharm. vol. xix. p. 19; Amer. Journ. Pharm. vol. xxxvi. p. 112.)

Cotton-Seed Oil. (Lipowitz.)

The author states that the deep brown commercial oil parts with its colouring matter readily by treatment with alkaline solution, yielding from 80 to 85 per cent. of a clear yellow oil, which is almost entirely without smell, and resembles in taste the finest salad and poppy-seed oils. It solidifies at from 3° to 0° C. The crude oil, which may be ranked among the drying oils, has a sp. gr. of .928 at 15° C., the purified of .9206. The fatty portion of the crude oil, amounting to 15 or 20 per cent., which is readily saponified by alkalies, may be obtained by the action of acids upon the soap in the form of a brownish or greenish buttery-like mass, which is well adapted

for waggon or machine grease, remaining fluid a long time in a warm place, and not resinifying. It may also be used for the preparation of an odourless potash or soda soap. (N. Jahrb. Ph. xx. 329; Amer. Journ. Pharm.; Chem. News.)

A New Kind of Cubebs. (Pas.)

Within a brief period, Cubebs from the Dutch East Indies have entered commerce. They are attributable to an analogous species, and are sold at a lower price than ordinary Cubebs. They differ essentially from true Cubebs, and must be considered as inferior, and unsuited for medical use.

They have been examined by M. Pas, and also by M. Groenewegan. They only yield 10 per cent. of extract to ether, while true Cubebs yield 21 per cent. M. Pas regards them as the ripe fruit of *Piper Cubeba*: M. Groenewegan, on the contrary, regards them as the product of *Piper anisatum*. (Journ. de Chim. Méd.)

Turpethin, a Resin obtained from *Ipomoea Turpethum*. (Spirgatis.)

Dr. Spirgatis gives an account of a resin obtained from the root of *Ipomoea Turpethum*. It appears to be a drastic purgative, and, like convolvulin and jalapin, to be a glucoside. The composition, moreover, according to the author, is the same as that of the two bodies named. Dr. Spirgatis has given the name *Turpethin* to the resin. When boiled with dilute sulphuric acid it splits up into sugar, and an acid body, to which the author has given the name *Turpetholic acid*. (Journ. f. Prakt. Chemie.)

On the Cultivation of Medicinal Plants at Mitcham. (Warren.)

Mr. Warren read a paper on this subject before the Pharmaceutical Conference.

The author gave a list of the plants cultivated and the acreage they occupied. The yield of oil per acre varied with season and

soil; lavender yielded 10 to 20 pounds per acre, the second year's growth giving more than the first or third; peppermint, 8 to 12 pounds, though much influenced by soil; 4 hundred-weight of chamomiles were obtained from an acre, and gave 8 pounds of oil; and pennyroyal afforded about 12 pounds of oil per acre. Mitcham produces annually 30,000 to 40,000 bushels of roses, and about 11 tons of chamomile flowers. The details of the extraction of essential oils were then given, and some remarks made on the rotation of medico-agricultural crops. (Pharm. Journ. vol. vi. p. 256.)

On *Potentilla Tormentilla*. (Adams.)

Mr. Adams gave a short history of this plant before the Pharmaceutical Conference, and drew attention to its peculiar value as a *non*-stimulating astringent and febrifuge. In the event of its being again introduced into the Pharmacopœia, he proposed formulæ for a tincture and infusion, and exhibited a specimen of the former to the meeting. (Pharm. Journ. vol. vi. p. 260.)

Poisonous Effects of Oil of Wormwood. (Marcé.)

M. Marcé has lately given an account of some experiments which prove that oil of wormwood, in doses of from 3 to 8 grammes, produces poisonous but not fatal effects. The experiments throw some light on the nervous symptoms which follow the excessive use of *absinthe*. (Brit. Med. Journ.)

PHARMACEUTICAL CHEMISTRY.

Acidum Sulphuricum, B. P. (Redwood.)

In a lecture on the British Pharmacopœia, Dr. Redwood severely criticized the process for and description of, sulphuric acid there given. Some exception was taken to his remarks, and he therefore made some experiments on the subject. A quantity of commercial oil of vitriol, of a specific gravity 1·844, was distilled in a glass retort. The process was conducted strictly according to the Pharmacopœia, the first 10 fluid drachms being rejected, and then the product collected until 1 fluid ounce was left in the retort. The distillate had a sp. gr. 1·848. One fluid drachm (100·8 grs.) was neutralized by 202 measures of the volumetric solution of soda, indicating that it contained more than one atom of water to the atom of anhydrous acid.

It is thus shown that the process of the Pharmacopœia is incapable of yielding the body described in the *Materia Medica*.

It was found that by distilling the acid in a platinum retort, the product was contaminated with sulphurous acid. (Pharm. Journ. vol. v. p. 599.)

Purification of Arsenical Sulphuric Acid. (Blondlot.)

The author recommends the following process :—Peroxide of manganese is added in the proportion of four to five grammes to the kilogramme of Sulphuric Acid, and the mixture heated to boiling in a porcelain dish, stirring all the time. The mixture is allowed to cool, and is then transferred to a retort and distilled.

M. Blondlot has distilled to dryness acid so treated, and never found a trace of Arsenic in the distillate. (*Comptes Rendus*.)

Purification of Sulphuric Acid. (Lyte.)

Mr. Lyte confirms the statement of Messrs. Bussy and Buignet, that arsenic in oil of vitriol, in order to pass during distillation, must be present in the state of arsenious acid; he recommends the following mode of purification:—If the acid contains nitrous compounds, heat it in a porcelain capsule to a temperature of about 110° C. with about a quarter to half per cent. of oxalic acid, till the latter is completely decomposed, and all effervescence has ceased. It is best to add the oxalic acid before heating, and to stir constantly until the reaction is completed. Allow the acid to cool down to about 100° C., and add to it a solution of bichromate of potash in sulphuric acid, or some of the salt itself in fine powder, until the pure green colour at first produced, is replaced by a yellowish-green, indicating an admixture of chromic acid in the free state. The acid so prepared being then distilled, passes from the first perfectly free from all impurity. (*Chem. News*. vol. ix. p. 98.)

An Anomaly in the Detection of Sulphuric Acid. (Spiller.)

Mr. Spiller points out that if to an aqueous solution of glacial phosphoric acid a small proportion of sulphuric acid be added, the mixed liquid does not give the usual indication of a precipitate on adding a few drops of chloride of barium, but requires a liberal addition of the last-named reagent, in order to induce the formation of the sulphate. By adding dilute hydrochloric acid, or by raising the temperature of the clear barytic solution, the formation of a precipitate may be determined; but continued ebullition fails in many instances to separate the whole of the sulphate of baryta. When, however, by the action of heat and hydrochloric acid conjointly, the white precipitate makes its appearance, it is always found to be markedly different in physical character to the product usually obtained. It is in the

form of a semi-transparent flocculent precipitate. This remarkable property of obscuring the indication of sulphuric acid appears to be possessed only by the glacial modification of phosphoric acid; but pyro-phosphate of soda dissolved in dilute hydrochloric acid gives a similar result. (Chem. News, vol. x. p. 219.)

Researches on Hydrocyanic Acid. (Bussy and Buignet.)

Messrs. Bussy and Buignet have given in a series of papers the results of a most elaborate investigation on hydrocyanic acid. The first paper is devoted to a comparison of the process of Gay-Lussac, which consists in reacting on bichloride of mercury by hydrochloric acid, with that of Gea Pessina, which consists in distilling yellow prussiate of potash with dilute sulphuric acid.

Gay-Lussac's process is the one generally used for preparing anhydrous hydrocyanic acid; the authors have also succeeded in obtaining the anhydrous acid by Gea Pessina's method. This they effect by passing the vapours through a long tube filled with dried chloride of calcium; the water is absorbed, and the anhydrous acid conducted into a small flask surrounded by a freezing mixture. The following are the conclusions drawn:—In the process of Gea Pessina, the quantity of hydrocyanic acid obtained approaches nearer to the theoretical quantity than it does in the process of Gay-Lussac. The apparatus of Gea Pessina can be easily modified so as to furnish the anhydrous acid. Medicinal prussic acid obtained with the anhydrous acid of Gea Pessina is more stable than that made from the anhydrous acid of Gay-Lussac. This stability is only relative, the two acids being subject to the same phenomena of decomposition, and differing only in the time necessary to develop these phenomena. Gea Pessina's acid does not owe its greater stability to its being liberated and carried over in the presence of water. When the decomposition of hydrocyanic acid has commenced under the influence of light, it continues very rapidly in the dark. Hydrocyanic acid can be exposed to the light during a certain time

without its appearance being modified; but it is nevertheless thereby predisposed to change, and afterwards more readily undergoes decomposition in the dark. The proportion of real acid in medicinal prussic acid diminishes in direct proportion to the increase of turbidity and coloration. After a certain time, and that not very long, the hydrocyanic acid is entirely destroyed.

In their second paper, the authors study the causes which prevent Gay-Lussac's process yielding the theoretical quantity of acid. It results—that the deficiency in the quantity of anhydrous hydrocyanic acid obtained by Gay-Lussac's process is due to the great affinity which bichloride of mercury possesses for hydrocyanic acid. This affinity retains in the residue a very notable portion of the acid generated by the reaction, and which can only be separated by a high temperature. That by the addition of an equivalent of sal ammoniac to the equivalent of cyanide of mercury, almost the exact theoretical quantity (95 per cent.) of anhydrous acid can be obtained, without otherwise modifying the conditions of the experiment. That when this modification is adopted, a better yield of anhydrous acid is obtained than by the process of Gea Pessina; the latter method only yielded the authors 88 per cent. of the theoretical quantity of acid.

In a third paper the authors study the action which hydrocyanic acid exerts upon various substances. Some of these results are very remarkable, and of great value to the pharmacist. The conclusions are:—That by its mixture with water hydrocyanic acid always gives rise to a very notable diminution of temperature and a considerable contraction of volume. That these two effects are perfectly parallel, and that the maximum for both is obtained with three equivalents of water and one equivalent of hydrocyanic acid. That aqueous hydrocyanic acid possesses for corrosive sublimate a very powerful affinity of solution; this is manifested by the elevation of temperature at the moment of mixture, by a retardment of the boiling-point of the liquid, and by the great quantity of salt dissolved. This affinity is so great that *aqueous hydrocyanic acid completely transforms calomel into corrosive sublimate and metallic mercury*. This effect is not

manifested by the anhydrous acid. No special combination is formed in these cases. Among the salts examined, it is only some which have, like corrosive sublimate, the power of retarding the boiling-point of the hydrocyanic solution; but the greater number act in a contrary manner, and augment the tension of the vapour of the same solution. The effect produced, either in one way or the other, is the combined result of the affinity of the salt added for the water on the one hand, and the acid on the other. This circumstance explains how certain bodies which have a great affinity for water, as nitrate of ammonia, diminish the vapour tension of the hydrocyanic mixture; while others, which have only a weak affinity for water, as acetate of lead, augment, on the contrary, the vapour tension of this same mixture. In certain cases the dissolving of certain salts in the aqueous acid is sufficient to cause the separation of the hydrocyanic acid in the form of a distinct supernatant layer. This layer may contain very variable proportions of acid and water. The quantity of acid thus separated is never in relation to the affinity of the salt added for the water.

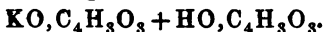
The authors show that by adding to aqueous prussic acid either sugar, common salt, chloride of calcium, etc., in sufficient quantity, the liquid separates into two layers, the upper one containing the most of the hydrocyanic acid. The effect is shown to the greatest degree by sulphate of manganese. If this salt be added, in powder, to ordinary medicinal 2 per cent. prussic acid, and the two well shaken, after a few minutes two distinct layers will be formed. (Journ. de Pharm. Dec. 1863, and April and May, 1864; also Ann. de Chim. et de Phys. Oct. and Nov. 1864.)

M. Fleury has offered an explanation of the simultaneous reduction of temperature and contraction of volume which occurs on diluting hydrocyanic acid, in accordance with the mechanical theory of heat. (Journ. de Pharm. Sept. 1854.)

The Preparation of Glacial Acetic Acid. (Melseus.)

The following is from the Jurors' Report, International Exhibition, 1862 :—

Nearly twenty years ago M. Melseus, a distinguished Belgian chemist, observed that ordinary acetate of potash, when supersaturated with ordinary acetic acid, yields, on evaporation, an acid salt having the composition—



The crystals of this salt may be heated to 120°C . without losing weight. From 200° to 800°C . the crystallizable hydrate of acetic acid distils over, and neutral acetate of potash remains in the retort. This has been applied to the manufacture of glacial acetic acid.

If neutral acetate of potash be distilled with an excess of moderately dilute acetic acid, the salt fixes part of this acid, whilst another portion more dilute passes over. Gradually the concentration of the acid increases, and ultimately a point is reached when the distillate solidifies.

The temperature must not rise above 800°C .

Purification of Oxalic Acid. (Maumené.)

M. Maumené asserts that this acid cannot be purified by successive crystallizations; however little alkali the acid contains, the successive crystals become richer and richer in it, from the less solubility of the acid oxalates.

To obtain pure oxalic acid, dissolve ordinary acid in sufficient water to give 10 or 20 per cent. of crystals; the first crystals are rejected, and the mother-liquor is evaporated to furnish a fresh crop which, after two or three crystallizations, will be found quite free from alkaline oxalates. (*Comptes Rendus*, vol. lviii. p. 173.)

Solubility of Gold in Nitric and Sulphuric Acids. (Reynolds.)

Mr. Reynolds states the following :—

An alloy of silver and gold was exposed to the action of nitric

acid until the gold was left in a powder; on heating this powder with sulphuric acid, a yellow solution was obtained, which, when poured into water, gave a purple precipitate. He found that strong sulphuric acid alone had no action on gold, but on adding a little nitric acid, solution took place to a certain extent. (Chem. News, vol. x. p. 167.)

Solubility of Metallic Oxides in Alkaline Citrates.

(Draper; Lebaique.)

Mr. Draper, F.C.S., has made experiments on this subject. The following are his results:—

(a.) Solutions of the neutral citrates of ammonia, soda, and potash, dissolve sensible quantities of metallic copper and lead, and their dry oxides at ordinary temperatures.

(b.) The same solutions dissolve a comparatively large quantity of the moist hydrated oxides of iron, copper, lead, and bismuth, and solution is in these cases accelerated by heat, and its activity is dependent upon the quantity of alkaline citrate present, and upon the molecular state of the oxide, *e.g.* a recently precipitated oxide is more easily soluble than an oxide which has been for some time prepared.

(c.) The ammonia and soda citrates have greater solvent power in relation to metallic oxides than the citrate of potash.

(d.) Solutions of the oxides of bismuth, lead, copper, and iron, in the alkaline citrates are unaffected by many of the reagents, which either produce precipitates or marked change of colour in solutions of the same oxides in the mineral acids. (Dub. Med. Press; also Pharm. Journ. vol. v. p. 374.)

M. Lebaique has also some remarks on the solvent power of alkaline citrates in the Jour. de Pharm. Sept. 1864.

On Commercial Phosphoric Acid. (Parkinson.)

Dr. Parkinson gave results of experiments on this subject to the Pharmaceutical Conference.

Twenty-eight samples had been examined with reference to

their strength and freedom from impurity, the result as to strength being that three samples came up to the British Pharmacopœia strength; five more were about the London Pharmacopœia strength; while the remainder were of various shades of declension. Phosphate of ammonia was present in six samples, sulphuric acid in one, nitric acid only traces in any. The presence of ammonia was considered evidence that the samples containing it had been made from the glacial acid, which commercially is made by heating the phosphate of ammonia,—the whole of the ammonia never being practically got rid of. One sample of German glacial contained 5 per cent. of ammonia, which is equal to $17\frac{1}{2}$ per cent. of tribasic phosphate of ammonia. If a pure glacial acid could be readily obtained commercially, that was suggested as the best and safest means of obtaining the dilute acid; and the combustion of phosphorus, with arrangements for the supply of air and collection of acid, was suggested as the best mode of obtaining such a pure glacial acid. Other plans or its preparation, which were detailed, had been tried, and found unsatisfactory. (Pharm. Journ. vol. vi. p. 264.)

Commercial Bromide of Potassium. (Fewtrell.)

The use of Bromide of Potassium as a remedial agent has greatly increased, and it is now administered in very large doses. Recently it has been observed that the use of the remedy has been occasionally followed by symptoms of *iodism*, or the peculiar effects produced by excessive doses of iodine or iodide of potassium. As no such effects have been observed to follow the exhibition of bromide of potassium, the circumstance gave rise to a suspicion that some specimens of bromide are adulterated with iodide of potassium. Mr. Fewtrell examined a specimen labelled "Bromide of Potassium (French)." It was a well-crystallized salt, the crystals being rather more opaque than those of pure bromide.

A qualitative examination at once revealed the presence of a considerable proportion of iodine; and quantitative analysis showed

that the amount present corresponded to 20 per cent. of iodide of potassium. (Chem. News, vol. x. p. 245.)

Commercial Bromide of Potassium. (Huskisson ; Umney.)

The publication of Mr. Fewtrell's paper directing attention to the presence of iodine in commercial bromide of potassium, has called forth two letters in the 'Pharmaceutical Journal' on the same subject. Mr. Umney states that he has examined a specimen of French bromide, and also samples from five of the principal manufacturing chemists in London, and, excepting in one instance, he found them all to contain iodine. He recommends the salt to be tested by adding to its solution some solution of starch and then a few drops of chlorine water, when the blue iodide of starch is produced. To estimate the amount of iodide, chloride of palladium should be added to the solution of the salt, and the precipitate of iodide of palladium collected and weighed.

Mr. Huskisson's letter especially relates to the means of detecting the impurity. He finds that the starch and chlorine test answers exceedingly well with those samples of bromide of potassium which are neutral. He has, however, met with a specimen of bromide which, although it contained iodide, gave no indication by this test. The failure in this case was due to the alkalinity of the salt. The addition of a minute quantity of nitric or hydrobromic acid previous to the application of the starch and chlorine was sufficient to rectify the error. Mr. Huskisson also appears to think that this test is too delicate in its indications. It reveals such minute traces as could be of no practical importance. He recommends, therefore, chlorine and bisulphide of carbon as a better test, and one which is fairer to the manufacturer in the present state of the bromine market. It is applied by adding to the solution of the suspected salt a few drops of chlorine water and then a drop or two of the bisulphide of carbon.* If any iodine is present, the bead of bisul-

* Chloroform would, we presume, answer equally well.—ED.

phide assumes a beautiful violet colour, while, if the salt is pure, it is only coloured yellow or yellowish-red.

To detect iodine in bromine, Mr. Huskisson recommends the following test:—the bromine is supersaturated with sulphide of ammonium, and the solution heated until the excess of ammonia is expelled and the sulphur precipitated. If the solution be then concentrated by evaporation, the iodine can be readily traced by starch and chlorine. (Pharm. Journ. vol. vi. pp. 322, 324.)

On the Purity of Foreign Iodide of Potassium. (Clayton.)

Mr. Clayton read a paper on this subject before the Pharmaceutical Conference.

The high price and large consumption of this article has made it one which the manufacturer has special temptations to adulterate. Of late years very large quantities of foreign make have found their way into our markets, giving rise to keen competition, which, in the case of drugs, is often far from improving their quality. From these considerations we might still expect to find much that is impure, but the results detailed below lead us to a different conclusion. The impurities of iodide of potassium are bromide and chloride of potassium, and sulphate, iodate, and carbonate of potash. Moisture in excess is also to be considered an impurity, for, besides giving the sample a greater liability to deliquesce, it shows an article of imperfect manufacture. The first-mentioned adulterant, though it has at times been frequently used, has in none of the 15 samples experimented upon been found, and the second only in quantities from 3·7 per cent. down to minute traces. Sulphate was never found in ponderable quantities, and iodate in only 3, all of which, however, were of foreign manufacture. (Several English samples were analysed for the sake of comparison.) In these three cases it never amounted to 1 per cent. Carbonate, though more generally present, never amounted to 1 per cent., generally much under this. From these results it will be seen that the iodide of potas-

sium now in the market is practically pure, the percentage in all the samples being over 95. (Pharm. Journ. vol. vi. p. 214.)

On Commercial Carbonate of Bismuth. (Umney.)

Mr. C. Umney read a paper on this subject before the Pharmaceutical Conference.

Commercial carbonate of bismuth having been suspected to be contaminated by basic nitrate, the author had analysed six samples, and gave in his paper the numerical results. In one case no nitrate was present, and the other five contained but small and probably accidental quantities.

In preparing carbonate of bismuth, by precipitating a solution of the nitrate by an alkaline carbonate, carbonate of soda was preferable to that of potash, but carbonate of ammonia with subsequent ebullition, yielded the purest precipitate. (Pharm. Journ. vol. vi. p. 208.)

Double Carbonate of Potash and Soda. (Fehling.)

This double salt was accidentally formed in making cyanide of potassium, and on another occasion during the preparation of saltpetre from nitrate of soda and potash of commerce. It presents itself in rhomboidal efflorescent prisms. Its formula is $\text{NaO}, \text{CO}_2 + \text{KO}, \text{CO}_2 + 12 \text{HO}$. It is very soluble in water, and does not resume its crystalline form on evaporation; it dissolves in its water of crystallization, which it loses nearly entirely at 212°F . Dried, it is not hygrometric, except in very moist air. (Journ. de Pharm.; Annal. der Chem.)

Crystallized Iodide of Iron and Quinine. (Smedt.)

M. Smedt believes he has obtained this salt perfectly defined. The following is his process:—

Sulphide of Barium q. s.

Make a concentrated solution, which precipitate by tincture of iodine; filter to separate the sulphur, and add sulphate of qui-

nine, dissolved in very concentrated and suitably acidulated alcohol, in sufficient quantity for exact decomposition.

Sulphate of baryta is precipitated, and Iodide of Quinine remains dissolved in the alcohol, communicating to it a dark-yellow colour. This iodide, separated from its solvent, is of a beautiful orange-yellow colour.

Take twelve parts of iodine and make into a very concentrated solution of iodide of iron, add to it the alcoholic solution of iodide of quinine, corresponding to thirty parts of sulphate of quinine, and heat in a water-bath; as the alcohol evaporates the liquid takes a beautiful green colour, and a small quantity of a resinous substance of a darker colour separates from the liquid. Towards the end of the evaporation, again add a little more alcohol, then filter and leave to crystallize: press out strongly the crystals and dry them.

Obtained in this way, this salt is in long yellow needles, quite soluble in boiling water, and not precipitated from it by cooling. It dissolves in cold alcohol and ether, is odourless, and has a bitter ferruginous taste. (*Journ. de Pharm.*)

Action of Iodine, Bromine, and Chlorine upon Sugar.

(Fougera.)

In a long course of experiments on the preparation of the syrup of the iodide of iron, which led M. Fougera to study the action of Iodine, Bromine, and Chlorine upon Sugar, he observed the two following facts:—

1st. The partial spontaneous decomposition of the syrup of iodide of iron by exposure to the air is arrested at a certain point, and does not go further, even if exposed for several months, in a capsule only covered with paper.

2nd. This syrup slightly decomposed, or even coloured by the addition of a small quantity of iodine, becomes perfectly white after a long exposure to the sun's rays or to a moderate heat replaced in the dark, it resumes its amber colour.

The author took two phials, hermetically sealed, each containing the syrup of iodide of iron, one coloured by natural decom-

position, the other by the addition of a small quantity of iodine ; he exposed them for a year to the sun's rays, then both syrups were colourless ; and they remained so for more than another year, though they were left in a dark cellar and in half-filled bottles.

The first fact reverses the old theory of the decomposition of the syrup of iodide of iron. The author finds it difficult to offer an explanation of it.

To explain the second fact the question arose, how did free iodine act upon sugar? 1 to 10 grains of iodine were added to 1 ounce of simple syrup, in a strong bottle closed with a glass stopper, and the whole exposed in a water bath at a moderate heat (60° C.), the iodine was dissolved little by little, and gave the liquid a reddish-brown colour ; but after several hours, the same temperature being always maintained, the syrup again became discoloured. The flask was cautiously shaken from time to time. The whole operation occupied about forty-eight hours. The greater the proportion of iodine, the more attention is required ; and towards the end of the operation care must be taken to remove the syrup as soon as it turns white. At this point, if the preparation is left exposed to heat, it soon colours again, the sugar is transformed into caramel, and this in its turn gives rise to carbonic acid, and to a blackish light and spongy substance, partly soluble in water and alcohol. To carry on the operation to the entire decomposition of the sugar, care must be taken to prevent a fracture of the flask by the expansion of carbonic acid gas, which is formed in quantities and may be collected.

Does the iodine all or in part combine with the sugar, as $C_{12}H_{11}O_{11}I$, or to the glucose, $C_{12}H_{14}O_{14}I$, to form iodides similar to the iodide of starch ?

Or, rather, in presence of sugar acting as a catalytic agent, should not iodine decompose the water into its elements, and unite with them to form hydriodic and iodic acids ? If so, these acids, once formed, would decompose the sugar precisely as do the mineral and some other acids.

Bromine upon sugar acts in much the same way as iodine, but rather more promptly.

Chlorine acts still more promptly than Bromine. (Amer. Journ. Pharm. vol. xxxvi. p. 307.)

Preparation of Pure Permanganates. (Boettger.)

M. Boettger prepares the pure permanganates from permanganate of baryta. The latter salt he obtains as follows:—To a filtered solution of *manganate* of potash is added chloride of barium until the green colour of the liquid disappears; a violet precipitate is produced, which is collected on a filter and washed with cold distilled water until the washings pass through of a rose colour. The precipitate then consists of pure manganate of baryta; this is introduced into a basin containing water, and boiled under the influence of a current of carbonic acid, continued agitation being kept up until the liquid is of a deep purple. It is then filtered through gun cotton; the liquid is a solution of pure permanganate of baryta. From this it is easy to prepare the other permanganates by double decomposition. (Journ. für Prakt. Chemie, t. xc. p. 303.)

Nitrite of Soda. (Roberts.)

Mr. A. J. Roberts has been engaged in experimenting on the process of the British Pharmacopœia for the preparation of Nitrite of Soda.

As is well known, this process consists in deflagrating a mixture of nitrate of soda and charcoal. The product is stated in the Pharmacopœia to be soluble in rectified spirit.

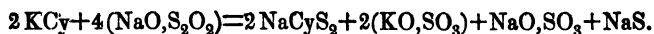
Operating with commercial nitrate, Mr. Roberts obtained a product of which 44 per cent. dissolved in spirit. With pure nitrates, products were obtained, the solubility of which ranged between 60 and 70 per cent. The salt dissolved out by spirit answered to the other Pharmacopœia tests.

Mr. Roberts next examined the degrees of solubility of nitrite and nitrate of soda respectively in rectified spirit. He found that 1 ounce of spirit would dissolve 10 grains of nitrite of soda; the same quantity dissolving 4 grains of nitrate. The

Pharmacoposia test therefore is of little value in separating the nitrite of soda from any excess of nitrate. (Pharm. Journ. vol. vi. p. 354.)

On the Uses of Hyposulphite of Soda as a Test. (Frøehde.)

The author has found this salt to be a very delicate test for cyanides. In all cases sulphocyanides, sulphide, and sulphate are formed. The reaction with cyanide of potassium may be taken as an example :—



For detection of cyanogen in the solid cyanides, the operation is as follows :—A little Hyposulphite of Soda is fused to a bead ; after the desiccation of the salt, a minute quantity of the suspected cyanide is added, and heat applied. If the bead on the platinum wire is now placed in a few drops of ferric chloride an intense blood-red coloration will be produced, around the wire, which gradually spreads over the whole liquid. If not heated long enough, some hyposulphurous acid may remain undecomposed, and produce with the ferric chloride the well-known violet colour, which, however, disappears, the ferric salt being deoxidized to ferrous chloride. On the other hand, too long continued a heat will decompose and burn the sulphocyanide with a peculiar red flashing flame. This process supplies a mode of distinguishing cyanide of silver from chloride, bromide, and iodide, or to detect it when mixed with the latter. (Poggend. Annal. Chem. Centralbl. ; Amer. Journ. Pharm. vol. xxxvi. p. 125.)

Phosphates in Medicinal Decoctions and Infusions.

Some researches made by M. Terreil show that plants contain the phosphates in a soluble state. If we pour a slight excess of ammonia into a well-filtered infusion of mallow leaves, or into a decoction of taraxacum root, the sides of the glass will within twenty-four hours be found lined with ammoniaco-magnesian phosphate. All the phosphoric acid is not precipitated by this.

first deposit, and if we add to the filtered fluid sulphate of magnesia saturated by sal-ammoniac, a new deposit of the ammoniacomagnesian phosphate occurs, and continues to increase. All vegetable solutions do not precipitate this phosphate when treated by ammonia, but they always do so when sulphate of magnesia saturated by sal-ammoniac is added. M. Terreil concludes from these facts that vegetable infusions and decoctions owe a portion of the action they exert on the economy to the phosphoric acid and phosphates they contain, the phosphate of lime of the bones proceeding from the soluble phosphates. (Bull. de Thérap. vol. lxiv. p. 29.)

Action of Ammonia on Starch. (Blondot.)

M. Blondot states that Ammonia and Starch placed in contact give rise to a compound which represents an equivalent of each in combination; it is a weak base. (Comptes Rendus; Chem. News, vol. x. p. 117.)

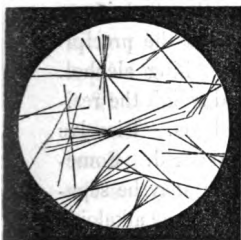
Compound of Quinine and Oil of Anise. (Hesse.)

M. Hesse dissolved five parts of Quinia and one part of Oil of Anise in boiling alcohol, and found brilliant crystals deposited, the composition of which accords with the formula, $2(C_{40}H_{24}N_2O_4) + C_{20}H_{12}O_2 + H_2O$. (Journ. de Pharm. Amer.; Journ. Pharm. vol. xxxvi. p. 20.)

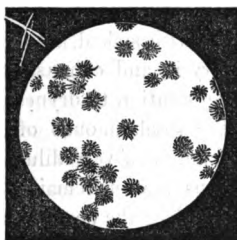
Tests for the Purity of Sulphate of Quinine. (Stoddart.)

Mr. W. W. Stoddart made an interesting report to the Pharmaceutical Conference on the purity of Sulphate of Quinine, and the means of detecting the presence of other cinchona alkaloids. He proposed a new test for the latter purpose, which appears to be of value. Fourteen grains of the suspected salt are dissolved in an ounce of water with ten drops of dilute sulphuric acid. To this solution is added a few drops of solution of sulphocyanide of potassium (180 grains in $1\frac{1}{2}$ ounce of water). An immediate precipitate of the several alkaloids takes place, each of

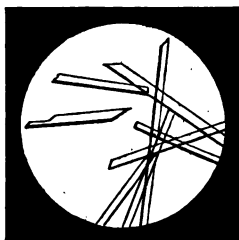
which, as seen under the microscope, is distinct and characteristic. If quinine, quinidine, and cinchonine be present, they will all be seen distinct from each other. A good plan is to place a small drop on a glass slide, and to put another of the sulphocyanide by its side. Over both place a piece of thin glass, which will cause the drops to touch. Examine the line of junction by a quarter-inch lens. By this method $\frac{1}{10000}$ of a grain of quinidine or cinchonine may easily be detected. (Pharm. Journ vol. vi. p. 241.)



Sulphocyanide of Quinine.



Sulphocyanide of Quinidine.



Sulphocyanide of Cinchonine.

Test for Muriate of Cinchonine.

Muriate of Cinchonine, it is said, has been offered for sale as sulphate of quinidine. A test has been given for detecting this substitution. It consists in heating a few grains on platinum foil; the muriates of the cinchona alkaloids fuse and give off, if ignition is avoided, purple fumes resembling the vapour of iodine. This the sulphates, or the alkaloids themselves, do not do. This test is curious, but perhaps hardly so safe as a little nitrate of silver. (Pharm. Journ. vol. v. p. 374.)

Quantitative Determination of Alkaloids in Cinchona Bark.

(De Vry.)

Dr. de Vry has published the process which he employs in the valuation of Cinchona Barks. Dry the powder of the Bark at 212° Fahr., and ascertain its weight. Mix it with a quarter of its weight of slaked lime, and boil the mixture with ten times its

weight of spirit (sp. gr. 0.85) for five minutes. Put the whole on a filter, and exhaust by successive quantities of boiling spirit until the total quantity of spirit used is equal to twenty times the weight of the Bark. Acidulate the spirit solution with acetic acid, and evaporate to dryness on a water bath. Treat the residue repeatedly with water. The watery solution thus obtained contains all the alkaloids, whilst the quinovic acid, fatty, and resinous matter, etc., remains on the filter. If this filter, with its contents, be duly treated with milk of lime, the quinovic acid can be determined. Evaporate the watery solution of the alkaloids to a small bulk, and mix it with slaked lime. Collect the precipitate, slightly wash it, dry it, and exhaust it by boiling alcohol. Evaporate the alcoholic solution to dryness, and weigh the residue. It represents the total amount of alkaloids. Dissolve these in the smallest quantity of very dilute acetic acid. Sometimes a trace of resinous matter remains, which may be separated and disregarded. Place the acetic solution of the alkaloids in a closed funnel provided with a cock, and agitate with a slight excess of caustic soda and a quantity of ether equal to fifteen times the weight of the alkaloids; allow the whole to stand six hours. Separate the ethereal liquid, and evaporate it to dryness; the residue consists of the quinine with small traces of the other alkaloids. To the aqueous portion, from which the ether has been separated, add just sufficient dilute acetic acid to redissolve the other alkaloids, making the solution as neutral as possible. Then add a few drops of a concentrated solution of iodide of potassium, and stir well: if quinidine is present, a sandy crystalline precipitate will appear of the hydriodate of quinidine. Collect this, dry it at 212° , and weigh it. Every 100 parts of hydriodate are equal to 71.68 parts of quinidine according to the formula, $C_{40}H_{24}N_2O_4HI$. Precipitate the filtrate from the hydriodate of quinidine by caustic soda, and weigh the precipitate; it consists of cinchonine, or a mixture of cinchonine and cinchonidine. The presence of small quantities of the latter can only be ascertained with certainty by the polarizing apparatus. (Pharm. Journ. vol. vi. p. 50.)

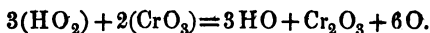
Preparation of Oxygen—Oxygenesis. (Robbins.)

Mr. Robbins has patented a new process for making Oxygen; it is especially intended to furnish a pure gas for medicinal inhalation.

A mixture of peroxide of barium and bichromate of potash in powder is treated with dilute sulphuric acid. Oxygen is immediately evolved in a steady stream; no heat is necessary. A bottle with a tube funnel and a delivery tube is all the apparatus necessary.

The reaction by which the Oxygen is liberated, was studied many years ago by Professor Brodie, but it was never practically applied to the preparation of the gas until Mr. Robbins patented it.

The sulphuric acid liberates chromic acid from the bichromate, and peroxide of hydrogen from the peroxide of barium. These two substances, namely, the peroxide of hydrogen and the chromic acid then react on each other as follows:—



The oxide of chromium dissolves in the sulphuric acid; the residue in the bottle therefore consists of sulphate of chromium, sulphate of potash, and sulphate of baryta.

One pound of the powder yields 5 gallons of Oxygen. The gas obtained is stated to be remarkably pure.

On the Preparation of Berberina. (Procter.)

Professor Procter prefers the process for isolating Berberina, given by Merrill in the Amer. Journ. Pharm. p. 503, 1862, based on the separation of the sulphuric acid from the sulphate by either baryta or oxide of lead. The oxide of lead is preferable, as, from its insolubility in water, its excess does not interfere with the purity of the resulting alkaloid in solution.

Take the root of *Hydrastis canadensis* or *Berberis vulgaris* in coarse powder, exhaust it by repeated decoction or digestion in boiling water, and evaporate the filtered liquids to a soft extract. Treat this several times with strong alcohol by digestion in a water-bath until it is exhausted (or until a quart of alcohol has

been employed for the extract from each pound of the root); add to the tincture one-fourth of its bulk of water, distil off five-sixths of the alcohol, and add to the hot watery residue an excess of diluted sulphuric acid, and allow it to cool. The Sulphate of Berberina crystallizes out, and if necessary may be drained from the mother-liquor, redissolved in the smallest quantity of boiling water, and again crystallized.

The salt is now ready for decomposition by oxide of lead, as obtained from the acetate or nitrate of lead by Liquor Potassæ. The oxide is added in excess, with agitation, to the Sulphate of Berberina dissolved in boiling water, the solution being kept hot during decomposition. When a drop of the hot clear liquor is not precipitated by baryta-water or acetate of lead, the digestion is finished. The solution should then be filtered off hot, evaporated, and set aside for crystallization.

Berberina crystallizes in stellated groups of minute acicular crystals. One grain dissolves in 100 grains of water at 60° F. (Amer. Journ. Pharm. vol. xxxvi. p. 11.)

On the Preparation of Aconitia. (Hottot.)

M. Ernest Hottot adopts the following mode of preparing this alkaloid, which, he states, has the advantage of yielding a more active product than the Aconitias of commerce.

Macerate the aconite root in powder in a sufficient quantity of alcohol of 85° during eight days. Displace the liquors, distil in a water-bath, add a sufficient quantity of quicklime, agitate from time to time, filter, precipitate by a slight excess of dilute sulphuric acid, and evaporate to the consistence of syrup. Add to this liquid two or three times its weight of water, allow it to repose, and remove the green oil which floats and solidifies at 68° F.; strain through a moistened filter to remove the last portions of oil; add ammonia to filtrate and heat to ebullition; the Aconitia is precipitated as a compact mass, which contains a great deal of resin, and separates easily from the liquor; wash the precipitate, treat it when dry by ether deprived of water

and alcohol, and permit the ethereal liquor to evaporate spontaneously, which gives impure Aconitia.

Dissolve the product thus obtained in dilute sulphuric acid, and precipitate hot by ammonia, the Aconitia separates in the form of a coagulum like codeia. Collect it in a filter, wash and dry it, dissolve in ether, evaporate to dryness, again dissolve in a small quantity of dilute sulphuric acid, add ammonia drop by drop, separate the first portion of precipitate, which is coloured, and then add the ammonia in slight excess; collect, wash and dry the precipitated Aconitia.

Twenty-two pounds of the root gave a mean of 61 to 92 grs. of the alkaloid.

Aconitia thus obtained is in the form of a white, extremely light powder; it contains 20 per cent. of water, but becomes anhydrous at 187° F., and is then a transparent amber-coloured substance. (*Journ. de Pharm. Ap.* p. 64; *Amer. Journ. Pharm.* vol. xxxvi. p. 312.)

On the Assay of the Alkaloids in Medicinal Extracts.

(Groves.)

This paper was read, by Mr. T. B. Groves, F.C.S., before the Pharmaceutical Conference.

The object of the author was to devise a process for estimating the strength of the vegetable extracts used in medicine. The method he employed was a volumetric one. Mayer, of New York, and Valser, of Paris, had worked upon the same subject, and all three had fixed upon the same liquid for precipitating the alkaloid, namely the iodo-hydrargyrate of potassium. All three also had suggested formulæ for the precipitate. Valser's experiments corroborated those of the author, while Mayer's pointed to a different conclusion. Mayer's experiments were then reviewed, and the details of some reactions given, from which it seemed that, on adding the iodo-hydrargyrate to the solution of the alkaloid, a point was arrived at when the addition of either liquid caused a precipitate. In this way some of the apparent anomalies might be explained. If, however, time were allowed

for the completion of the reaction, more definite results might be obtained. He described the reactions with strychnia, quinine, cinchonine, morphia, nicotina, and codeia, and reviewed Mayer's results, which were quite, he said, anomalous. In estimating the amount of alkaloid in an extract, the alkaloid must first be isolated as far as possible by Stas's well-known method. In estimating the medicinal value of an extract, more exact methods than those now known must be discovered before accuracy can be attained. (Pharm. Journ. vol. vi. p. 268.)

Assay of Nux Vomica. (Mayer.)

Professor Mayer, in an elaborate paper in the Proceedings of the American Pharmaceutical Association, gives a process for the estimation of strychnia and brucia in Nux Vomica, which depends upon the use of a normal solution of iodide of mercury. (Chem. News, vol. x. p. 63.)

Antidotes for Strychnia. (Bellini.)

Professor Bellini, after a long series of experiments on poisoning by strychnia and its salts, arrives at the following conclusions :— That the best antidotes are tannin and tannic acid, chlorine, and the tinctures of iodine and bromine. Chlorine attacks the strychnia even when it is diffused through the system, for the author found that in rabbits poisoned with the sulphate of strychnia and made to inhale chlorine gas in quantity, such as was not sufficient in itself to kill, the convulsions were retarded, and were milder when they recurred; death, also, was less rapid. The author also observed that when strychnia was exhibited with pyrogallie acid, the convulsion was retarded for the space of half an hour, by comparison with other experiments in which the alkaloid was given by itself. He believes this arrest in the symptoms to be due, not to the chemical action of the acid on the strychnia, but to its astringent effects on the mucous membrane of the stomach, whereby the absorption of the poison is rendered difficult. (Brit. Med. Journ.)

On the Extraction of Cantharidin. (Mortreux.)

Observing that Cantharidin is insoluble in sulphide of carbon, it occurred to the author that this property might be made available in isolating the active principle of Cantharides. After treating with chloroform, evaporating the solution, and obtaining the Cantharidin crystals disseminated in solid fat and green oil as in Procter's process, M. Mortreux employs sulphide of carbon, which dissolves the fatty bodies, and leaves the Cantharidin nearly pure, which is easily collected on a filter, washed and dried. (Journ. de Pharm. July, 1864.)

Application of Dialysis to the Investigation of Alkaloids.

(Grandeau.)

M. Grandeau, in 'Comptes Rendus,' describes experiments he made with a view of testing the application of Dialysis to the detection of minute quantities of alkaloids in organic mixtures. He placed in a dialyser 100 cubic centimetres of distilled water holding in solution $\cdot 01$ gramme of pure digitaline; dialysis continued for twenty-four hours, after which it was suspended, when the exact amount of digitaline used was discovered in the liquid contained in the outer vessel.

2. Into 45 cubic centimetres of fresh normal urine, he poured a solution containing $\cdot 5$ gramme of digitaline. After eighteen hours he suspended the process, and evaporated to dryness the liquid in the outer vessel; he found the same evidences of digitaline in the outer vase, as in the first instance; but he also found traces of the alkaloid in the dialyser, thus proving that the dialysis was not complete.

3. He took the stomach and intestines of a dog, macerated them in water for about two hours, and filtered the yellowish, strong-smelling liquid through canvas; he then divided the solution into four parts, adding to the first $\cdot 04$ gramme digitaline, to the second $\cdot 02$ gramme brucine, to the third $\cdot 02$ gramme of hydrochlorate of morphia, and left the fourth intact; he dialysed the four solutions separately, and after twenty-four hours he proved the existence of each of the alkaloids in the liquid contained in the

outer vessel. M. Grandeau also applied the ordinary tests for the alkaloids to the diffusate of the stomach only, and found that the animal matters to which the poisonous substances were added did not by themselves give coloration which might lead to error. (Comptes Rendus, vol. lviii. p. 1048; Chem. News.)

New Test for Digitaline. (Grandeau.)

M. Grandeau, after alluding to the reaction peculiar to Digitaline with hydrochloric acid, and condemning it on account of the same colour being produced in the presence of other alkaloids, recommends the following:—

Expose Digitaline, moistened with sulphuric acid, to bromine vapours: the mixture instantly becomes violet, and the shade varies from heartsease violet to mauve, according as there is more or less Digitaline. This coloration, shown by sulphuric acid and modified by bromine vapour, is quite distinct with .0005 gramme of Digitaline, or even with the faintest traces. None of the following substances which M. Grandeau submitted to the same test gave the like indication:—Morphine, narcotine, codeine, narceine, strychnine, brucine, atropine, solanine, salicine, santonine, veratrine, etc. etc. (Comptes Rendus, vol. lviii. ; Chem. News.)

On Digitaline. (Lefort.)

M. Lefort gives the following account of the two foreign digitalines met with in commerce:—

1. *German or Soluble Digitaline.*—This is said by the author to be made by Merck, of Darmstadt. It is of a yellowish-white colour, neutral to test paper, completely and readily soluble in water and alcohol. It is, on the contrary, but slightly soluble in ether, sulphide of carbon, and benzole. Tannin completely precipitates it from an aqueous solution. In one particular it will be seen, that of solubility in water, this article differs essentially from that described in the British Pharmacopœia.

When the powder is dropped into hydrochloric acid it immediately dissolves, forming a yellow solution, which gradually turns brown and finally becomes green. The green colour, however, is less bright than that given by the insoluble digitaline to be presently described, and the solution also remains transparent longer.

As the green colour is developed the solution becomes turbid, and emits an odour resembling that of powdered digitalis or the tincture, and deposits a brown substance, which seems to be a compound of digitaline or of one of the principles accompanying with hydrochloric acid.

When exposed to the vapour of hydrochloric acid this soluble digitaline turns rapidly brown, but exhibits no green colour.

Examined by a microscope with a high power, the powder is seen to consist of small semi-transparent fragments, sometimes presenting sharp edges, but of no definite crystalline form. An alcoholic solution evaporates spontaneously to a clear varnish, and no trace of crystallization can be observed.

2. *French, or Insoluble Digitaline.*—The colour of French digitaline varies from a yellowish-white to a bright yellow. It is but very slightly soluble in cold water, a litre only dissolving about 0.50 gramme; it is very soluble in alcohol. Sulphuric ether, sulphide of carbon, and benzole dissolve a small quantity; tannin precipitates it from a saturated aqueous solution.

The powder dropped into hydrochloric acid gives a yellow solution which, in a few minutes, passes from a bright to a deep green, according to the quantity of digitaline employed; but as the green tint is produced, a deep green-coloured substance is deposited, and a smell of digitalis is evolved.

When exposed to the vapour of hydrochloric acid it is first coloured yellow, then brown, and afterwards green, the characteristic smell of digitalis becoming very apparent. The green powder (like the fresh powder of foxglove leaves) becomes partially decolorized by exposure to sunlight, but the colour can be restored by another exposure to the vapours of the acid.

This last reaction suffices to distinguish between soluble and

insoluble digitaline, and the author considers it sufficient to prove the presence of the latter.

An alcoholic solution of French digitaline (Menier's), left to evaporate spontaneously, and then examined by the microscope, showed a multitude of small spots, sometimes round and sometimes oval, which gave to the residue the cellular aspect of organized structure. This appearance the author considered to support the opinion of Homolle, who supposed that insoluble digitaline was never a single and constant product; and he, in fact, determined that French digitaline contained some volatile matter which communicated its characteristic odour. (Chem. News, 1864, p. 99.)

Digitalium, a new Volatile Alkaloid. (Englehardt.)

The author submitted the fresh leaves of foxglove to the same process by which conia is extracted from hemlock, and found that they yielded a volatile alkaloid which he named *Digitalium fluidum*, and which, from the experiments made with it on animals, appears to be the real bearer of the physiological action of this plant.

This alkaloid is exceedingly volatile, of an oily consistence, an alkaline reaction, difficultly soluble in water, readily so in alcohol, little soluble in chloroform, and soluble in absolute ether. Its odour is very penetrating, intermediate between that of conia and nicotine. (Neues Jahrb. f. Pharm.; Amer. Journ. Pharm. vol. xxxvi. p. 126.)

New Reaction for Veratria. (Trapp.)

Trapp, of St. Petersburg, has observed that the smallest trace of Veratria dissolved in concentrated hydrochloric acid gives a colourless solution which on continued boiling assumes a red colour, which finally becomes very intense and resembles that of permanganate of potash. This solution remains unaltered by standing for a long time. (Polytechnisches Notizblatt, C. N. Feb. 6, 1864.)

Mercurialis, a new Volatile Alkaloid. (Reichardt.)

M. Reichardt took the leaves of *Mercurialis annua*, and submitted them to distillation with an excess of quicklime, and found that a volatile alkaloid having a disagreeable odour was disengaged. He collected the vapours in a receiver containing dilute nitric acid, and evaporated the liquid over a water-bath, by which means a residue was obtained, containing ammonia, brown resinous matter, and a salt of a base, which the author named *Mercurialin*.

This alkaloid is very poisonous; it has not been analysed. It is an oily liquor of a disagreeable odour and an alkaline reaction, transformed by the action of the air into a resin of butyraceous consistence. Its boiling-point is 284° F. It absorbs CO_2 , and yields a carbonate very soluble in alcohol.

The chloride is soluble in alcohol. The oxalate is very soluble in water. *Mercurialin* is very hygroscopic. (Journ. de Chim. Méd.; Amer. Journ. Pharm. vol. xxxvi. p. 214.)

Test for Atropia. (Gulielmo.)

The author takes a little Atropia, dissolved in a few drops of concentrated sulphuric acid, and heats it. It acquires a brown colour, at the same time emitting an intense odour, resembling that of the flowers of oranges and *Prunus spinosa*. The odour is particularly evident if a few drops of distilled water are added as soon as the brown colour and vapours appear. (Kühtze's Notizen; Amer. Journ. Pharm. vol. xxxvi. p. 112.)

Physiological Action of Opium and its Alkaloids. (Bernard.)

M. Claude Bernard has communicated a most valuable memoir to the French Academy on this subject.

This eminent physiologist was led to experiment on the effects of all the alkaloids of opium, from noticing great and unexpected variations in those effects when the alkaloids were employed to facilitate experiments on living animals. He found, in fact, that the six principal alkaloids—morphine, narceine, codeine, narco-

tine, papaverine, and thebaine—each produced a particular effect, but the action may be classed under three heads—the soporific, the exciting or convulsive, and the poisonous action. The relative power of the alkaloids to produce these effects is indicated by their position in the following table :—

<i>Soporifics.</i>	<i>Excitants.</i>	<i>Poisons.</i>
Narceine.	Thebaine.	Thebaine.
Morphine.	Papaverine.	Codeine.
Codeine.	Narcotine.	Papaverine.
	Codeine.	Narceine.
	Morphine.	Morphine.
	Narceine.	Narcotine.

Thus it is seen that three only produce purely soporific effects, but even these vary greatly in character and degree. Morphia, for example, produces a stupefying effect. The animal is scarcely insensible, but it becomes a sort of living machine, and will remain in any position in which it is placed. The sensitive nerves are extremely dull, and the extremities may be strongly pinched without disturbing the animal. When roused by a noise it seems frightened, but quickly relapses into narcotism. As the animal awakens it has a haggard look, and the hinder extremities seem partially paralysed, so that it walks like a hyæna.

The effects of codeia are essentially different. The animal is tranquil, and seems to be in calm sleep, but he is at the same time very excitable; a slight noise wakes him up, and he runs away. The sensitive nerves are much less affected than by morphia, and no paralysis is observed when the animal awakens.

Narceia seems to produce the combined effects of morphia and codeia, and appears to be the most strongly soporific principle in opium. The animal sleeps more profoundly, but is not so much stupefied as with morphia; and at the same time is not so excitable as when under the influence of codeia. It quickly returns to its natural state, and on awaking is neither frightened nor savage.

All these effects have been confirmed by repeated experiments on all available animals, and they appear to be constant and invariable.

Coming to the poisonous effects of the alkaloids, the author informs us that thebaia is the most active poison. A decigramme of the hydrochlorate of this alkaloid injected into the veins of a dog killed it in five minutes.

Codeia stands intermediate as a poison.

Thebaine also stands first as the most powerful agent in producing convulsions. (Chem. News, 1864, p. 129.)

The Morphia Salts of Commerce. (Heathfield.)

Mr. Heathfield read a paper on this subject before the Pharmaceutical Conference.

The inquiries of the author had been directed to the amount of moisture existing in these salts, and also to the question as to whether codeia was present in them.

Three samples of hydrochlorate from different manufacturers had been examined, and found to contain respectively 5·8 and 9·8 per cent. of water, estimated by drying at 212°. The amount of alkaloid obtained from each of the above (dried at 212°) was 79·7, 76·7, and 74·3,—the quantities thus varying inversely as the amount of water.

It was noticed that the samples containing the most moisture dissolved more readily in water, and their solution was less coloured than those which were originally drier.

Three samples of acetate were then examined in a similar way, and found to contain respectively 5, 10, and 12·6 per cent. of moisture. It was found that the sample containing least water fused, and became dark-coloured, with loss of structure on application of a water-bath heat; whilst that containing the most water retains its pulverulent form unaltered at that temperature.

The morphia precipitated from these samples was found to be remarkably pure, being perfectly soluble in caustic potash; scarcely acted on by ether, and almost entirely free from codeia, as were also the mother-liquors from which they were separated.

The author also quoted experiments by Mr. How to show that, however feasible the conversion of morphia into codeia might

appear on a comparison of their formulæ, it could not be carried out; a substance isomeric with codeia had been obtained, but it was by no means identical. (Pharm. Journ. vol. vi. p. 262.)

A New Alkaloid in *Aconitum Napellus*. (Smith.)

Messrs. T. and H. Smith, of Edinburgh, have detected the presence of a peculiar crystalline principle in the juice of Aconite root. They have named this substance *ACONELLA*; a very careful examination of its characters and properties, however, has led them to the belief that the body is identical with *Narcotine*. *Aconella* presents two characters which render its separation easy; these are, its almost absolute insolubility in neutral watery liquids, and its great solubility in excess of acid. The authors prepare it by evaporating the juice of aconite root to a soft extract, exhausting it with spirit, and then distilling to an extract; exhausting this again with spirit, and mixing the spirituous liquid with milk of lime (using $1\frac{1}{4}$ lb. for every cwt. of fresh root), filtering, adding sulphuric acid till there is no further precipitate, filtering again, and distilling off the spirit. The watery portion left after the separation of a green fatty matter is filtered; it will be found to be strongly acid, and it is in virtue of this that the *Aconella* is kept in solution, for it separates as soon as the acid is neutralized. A strong solution of carbonate of soda is therefore added, making the addition very cautiously towards the end, so as to bring the liquid nearly neutral, but still slightly acid; it is then left to itself for a day or two. None of the aconitina falls unless the liquid is alkaline. An abundant precipitate separates, partly as a loose powder, and partly as a crystalline deposit on the sides of the vessel. This is collected; it is *Aconella*. It may be easily obtained pure in snow-white crystalline tufts by repeated crystallizations from boiling spirit, with the aid of a little charcoal.

Aconella is very insoluble in water, very sparingly soluble in cold spirit, but soluble to the extent of 1 in 11.4 parts of boiling rectified spirit. It is moderately soluble in ether, and quite

remarkably so in chloroform. It possesses a most remarkable tendency to crystallize. Although very soluble in all the acids, it manifests little or no inclination to combine with them; it does not neutralize their action on litmus, nor does it furnish crystalline salts.

Aconella does not appear to have any poisonous quality.

Messrs. Smith suggest that the variable strength of commercial aconitina may be due to an admixture with aconella. This may be prevented, in the preparation of aconitina, by carefully avoiding more than the faintest acid reaction in redissolving the crude alkaloid; the aconella will then remain insoluble. They state that the quantity of aconitina obtained from 1 cwt. of fresh roots should never exceed 1 ounce.

As we have already stated, Messrs. Smith have made a careful comparison of the properties and reactions of aconella with those of narcotine, including an accurate determination of their solubilities in spirit and their equivalents, as given by a platinum salt, and they find them to be identical. (Pharm. Journ. vol. v. p. 317.)

Identity of Aconella with Narcotina. (Jellett.)

Professor Jellett, of Dublin, submitted a solution of Aconella, the new alkaloid discovered by Messrs. Smith, of Edinburgh, to the action of polarized light, with a view of comparing the change in the polarization of a ray produced by transmission through a tube filled with this solution, with the change similarly produced by a solution of narcotine.

From his experiments, Professor Jellett has little doubt of the identity of Aconella with Narcotine. (Chem. News, April 30, 1864.)

Cicutine. (Young.)

Dr. James Young states that a substance called *cicutine* has recently been introduced as a medicinal agent for the treatment of neuralgia. It is prepared by M. Pelletier, of Paris, and is in the form of granules. Dr. Young was recommended to try its

action by Dr. Simpson, and he cites two cases, coming under his own experience, in which the beneficial results were most marked; in one instance complete relief from pain being obtained. These granules have been carefully analysed by Dr. Christison and found to contain *conia* or *conicin*, the alkaloid and active principle of hemlock. Each granule contains $\frac{1}{80}$ of a grain of the alkaloid.

Cicutine, then, is really *Conia*; a reference to chemical works shows that both these names were originally conferred upon this alkaloid. *Conia* has also been recommended in medical treatises, as a sedative in neuralgic affections. (Pharm. Journ. vol. v. p. 395.)

Decomposition of Hydrocyanic Acid. (Campani.)

Professor Campani, of Sierra, having observed that aqueous hydrocyanic acid prepared according to M. Pessini's process may undergo two kinds of spontaneous decomposition, one being *tacit* and the other accompanied by a violent explosion, he examined these phenomena with care. Having prepared the acid, he examined the bottle carefully against the light, and found that the acid had been partially converted into a solid substance. The phial having been shaken, a violent explosion took place, and the vessel was broken to pieces. Another bottle was prepared and no explosion took place; but after the lapse of four months a crack was observed in the glass, and the parchment which covered the phial was shrivelled up as if it had been exposed to the fire. On breaking the vessel, it was found to contain a deposit of solid matter, of a slightly violet hue speckled with yellow. It weighed six grammes. This residue emitted the smell of ammonia, and not the slightest trace of that of prussic acid. Professor Campani having subjected this to analysis, obtained a great quantity of white transparent crystals of the same form as those of urea, with a slightly bitter taste. All the characteristics were those of urea. Campani concludes that the aqueous hydrocyanic acid in question produces urea by its decomposition. (Phil. Med. Reporter.)

Action of Light on Santonine. (Sestini.)

Santonine is coloured yellow by exposure to solar light, and this takes place in a vacuum as well as in the air. It does not take place, however, when the actinic rays are cut off by a solution of nitrate of uranium. M. Sestini states that powdered Santonine exposed to light not only changes colour but evolves a resinous odour, and acquires a very bitter taste. Water added to this changed santonine acquires a yellow colour, presents an acid reaction, and has a bitter taste; it contains formic acid.

M. Sestini, from a series of experiments, concludes that by exposure to solar light, santonine is changed into formic acid, and an uncrystallizable substance much more soluble in alcohol and ether than santonine itself, and also a red resinous substance. To the yellow substance he gives the name of *Photo-santonin acid*. (Bull. de Soc. Chim. 1864, p. 21.)

On a New Principle from Castor Oil Seeds. (Tuson.)

Professor Tuson has been engaged in examining substances obtained from the Nat. Order *Euphorbiaceæ*, and has succeeded in obtaining from the seeds of *Ricinus communis* an alkaloid which he names *ricinine*.

Preparation of Ricinine.—Crushed castor-oil seeds are exhausted by successive quantities of boiling water, and the matters soluble in water separated from the oil and other insoluble materials by filtration through wet calico. The filtered liquid thus obtained is then evaporated to dryness over a water-bath, and the extract produced treated with boiling alcohol so long as it exerts any solvent power. The alcoholic solutions are allowed to cool, when a small portion of a resinoid body precipitates. This is separated by filtration, and the filtered liquid is concentrated to a small bulk, and allowed to stand all night. The next morning a mass of white crystals are found to have deposited from the alcoholic solutions. These crystals are the new alkaloid, *ricinine*.

If ordinary castor oil be shaken up with water, the water

decanted and evaporated to dryness, a small quantity of resinous residue is left, which, when treated with boiling benzole, partly dissolves. If the benzolic solution of this residue be allowed to evaporate spontaneously, a small quantity of white crystals are obtained, which, so far as one can judge from their physical properties, are *ricinine*.

Neither ricinine nor the resinoid body which falls when the alcoholic solution of the aqueous extract of the seeds is allowed to cool, is the purgative principle of castor oil, or of the seeds from which it is expressed, for Professor Tuson administered two grains of each of these educts to a rabbit, and the animal, for the period of a month, did not evince the slightest inconvenience, temporary or otherwise. (Pharm. Journ. vol. vi. p. 35.)

Coriamyrtin. (Ribou).

The author describes the action of the active principle of *Coriaria myrtifolia*. When given to a dog in doses of 0.2 grain, it produced vomiting, horrible convulsions, followed by death in less than two hours. The principle phenomena produced were violent agitation of the head, communicating with all the members, tetanic convulsions, contraction of the pupil, and frothing at the mouth. After death, the blood vessels were found filled with brown coagulated blood. Coriamyrtin does not irritate the mucous membrane of the intestines. (Rép. de Pharm.; Amer. Journ. Pharm. vol. xxxvi. p. 114.)

Wrightine, a New Alkaloid. (Stenhouse.)

Dr. Stenhouse has extracted a new alkaloid from the seeds of *Wrightia antidysenterica*, a tree belonging to the Order *Apocynaceæ*, indigenous to various parts of India, and occurring also in Ceylon. In India the seeds are considered a valuable remedy in dysentery, diarrhoea, and fever. The seeds contain a large quantity of fixed oil; when this is removed by bisulphide of carbon, the residue dried, and then exhausted by alcohol, the spirituous extract contains a crude alkaloid. It is purified by

solution in acid and precipitation by an alkali. Wrightine and its salts are uncrystallizable and have an extremely persistent bitter taste. (Pharm. Journ. vol. v. p. 493.)

On two New Alkaloids obtained from Ergot of Rye. (Wenzell.)

Mr. W. J. Wenzell has succeeded in isolating two new vegetable nitrogenized alkaloids from an aqueous solution of Ergot.

The first he has provisionally named "*Ecbolina*." He believes that the physiological power possessed by Ergot over the womb is due to the presence of this alkaloid. Ecbolina was first obtained in the state of chloride, from which the alkaloid was isolated.

The second alkaloid Mr. Wenzell named "*Ergotina*," which is also isolated from its chloride.

Both these alkaloids appear uncrystallizable; they are soluble in alcohol and water, sparingly soluble in wood-spirit, and insoluble in pure ether, and chloroform.

Half a grain of ecbolina possesses the same therapeutic action as thirty grains of Ergot. Ergotina is believed to be less active than its congener. (Amer. Journ. Pharm. vol. xxxvi. p. 193.)

Active Principle of Calabar Bean (*Physostigmin*).

(Jobst and Hesse.)

The authors describe the preparation of a powerfully poisonous principle (which they have found only in the cotyledons of the bean) from the strong alcoholic extract, as follows:—

The extract is dissolved in a little cold water, and calcined magnesia is added until the acid reaction disappears, and a brown colour is produced. The liquid is then evaporated by gentle warmth nearly to dryness, when the residue, still moist, is placed upon white filtering-paper and agitated in a suitable vessel with ether until the brown colour is removed from the paper. The collected ethereal solutions are then filtered and agitated with a few drops of very dilute sulphuric acid, whereupon they separate into two liquids, the upper one of which contains a

colourless, inactive ethereal oil; while the other, of a dark-red colour, is an aqueous solution of the sulphate of Physostigmin. The latter, carefully separated by a pipette from the ether, is precipitated with magnesia, and the alkaloid extracted by the smallest possible quantity of ether. Finally, this ethereal solution is evaporated to dryness.

Thus obtained, Physostigmin is a brownish-yellow amorphous mass, appearing in the first place in oily drops. It is easily soluble in ammonia, solution of soda, ether, benzine, and alcohol.

For medicinal purposes it is important to make use of the alcoholic extract of the bean instead of the pure alkaloid; since the latter, both in its pure state and in combination with acids other than that of the bean, readily undergoes decomposition. (Wittstein's Vierteljahr. Ph. vol. xiii.; Amer. Journ. Pharm. vol. xxxvi. p. 334.)

Analysis of the Berries of Viburnum Lantana. (Enz.)

Tannin.

Valerianic, Acetic, and Tartaric Acids.

Yellow amorphous and hygroscopic principle.

Acrid principle.

Red colouring-matter.

Sugar, Gum, Fixed Oil, Wax, and Chlorophyll.

(Wittst. Viert. Schr. pp. 528-535.)

Caffeidin, a new Base derived from Caffein. (Strecker.)

M. Strecker, in submitting a concentrated aqueous solution of Caffein to distillation with a hot saturated solution of baryta, obtained water, ammonia, and methylamine. In the fixed residue in the retort M. Strecker found carbonate of baryta and *Caffeidin*, a new base.

Caffeidin is an oily liquid, $C_{14}H_{13}N_4O_2$. It is not volatile, and loses nothing at 212° F. (Journ. de Pharm. and Amer. Journ. Pharm. vol. xxxvi. p. 20.)

**Lycin, an Alkaloid found in *Lycium Barbarum*.
(Husemann and Marmé.)**

From the fact that nearly every genus of the Order *Solanaceæ* is known to yield a peculiar alkaloid, Drs. Husemann and Marmé were led to examine *Lycium Barbarum*, the matrimony-vine, a climbing plant very generally cultivated for ornamental purposes. Several species of the genus *Lycium* are used medicinally.

The authors obtained the alkaloid, which they named Lycin, from the leaves and stem by Sonnenschein's process for the separation of the poisonous alkaloids, founded on their precipitation by means of phospho-molybdate of soda. Lycin differs from all known solid vegetable bases by the remarkable readiness with which it dissolves, so as to deliquesce within a few minutes when exposed to the air, a fact which renders its extraction difficult by any other method than the above.

The crystals form brilliant, white, rhombic prisms, half an inch in length, very readily soluble in water, ordinary alcohol, and scarcely in ether. (Ann. der Chem. u. Pharm.; Amer. Journ. Pharm. vol. xxxvi. p. 225.)

On the Crystalline Constituents of Plants. (Attfield.)

Dr. Attfield read a paper on this subject before the Pharmaceutical Conference.

The author had dialysed a few plant-juices, the first that came to hand, and from each had obtained some of the crystalline constituents. The tops of the common potato yielded a crop of nitrate of potash, some cubes of chloride of potassium, hexagonal crystals not analysed, sugar, and an ammonia salt. The deadly nightshade gave nitrate of potash, an unknown magnesia salt in square prisms, sugar, etc. Pea-pods yielded only sugar.

The common garden lettuce contained nitrate of potash, tetrahedra of undetermined composition, sugar, and ammonia. Cucumbers furnished sugar, ammonia, and sulphate of lime. The cabbage also furnished sulphate of lime and ammonia. Stramo-

nium contained so much nitrate of potash, that dried portions quite deflagrated on being ignited.

From these experiments the author thought the proposed application of dialysis promised to be of great service, directly and indirectly, in investigating vegetable physiology. (*Pharm. Journ.* vol. vi. p. 212.)

On the Detection of Alcohol in Volatile Oils. (Dragendorff.)

The employment of sodium as a means of detecting alcohol in chloroform has suggested to Dragendorff the use of this reagent in ascertaining the presence of alcohol in volatile oils. A small piece of sodium is placed in perfectly pure non-oxygenated volatile oil; no other change takes place at first than the disengagement of a few bubbles of gas, and this is in some cases only due probably to a small amount of water which some of these oils contain. After exposing it for some hours or days in an uncovered test-tube, the sodium becomes covered with a brown resinous coating, while the oil retains its original colour.

In the case, however, of an oil containing but a few per cent. of absolute alcohol, the moment the sodium comes into contact with the oil, a lively disengagement of gas is at once seen, in the course of which the pieces of sodium are brought to the surface. Upon the addition of the sodium, a milkiness is immediately produced in the oil, which always disappears, and the oil sooner or later acquires a yellow colour. After a short time the oil containing alcohol becomes brown, and much less fluid, in some cases so thick as not to flow out of the tube when inverted.

Dragendorff was enabled to detect in non-oxygenated oils from 5 to 10 per cent. of alcohol. The admixture of 3 to 5 per cent. does not affect these reactions. The author has applied this test to many of the oils in ordinary use, as oil of turpentine, lavender, rosemary, caraway, bergamot, lemon, peppermint, sassafras, eubebs, origanum, cajeput, fennel, copaiba, etc. etc. (*Pharm. Zeit. für Russland, etc.,* vol. xiii. p. 26.)

Detection of Methylated Spirit. (Reynolds.)

Mr. Emerson J. Reynolds has given the following test, by which wood spirit may be recognized in tinctures, etc. A small quantity of the suspected spirit is placed in a tube retort, and distilled over into a cooled test-tube; two or three drops of a very dilute solution of chloride of mercury are now added to the distillate, and then excess of solution of caustic potash, and the whole well shaken. If the precipitated oxide of mercury does not redissolve even on warming the liquid, wood spirit is not present; should complete solution be effected however, the mixture is warmed and divided into two portions; to one acetic acid is added, which causes the formation of a yellowish-white bulky precipitate; the remaining portion is long boiled, and a similar precipitate is thrown down, thus proving with certainty that wood naphtha is present. In applying this test it is necessary to be careful not to add too much of the mercurial solution, as in that case an insoluble compound would be formed, and as a consequence a negative result arrived at. (Pharm. Journ. vol. v. p. 272.)

On a Test for Methylated Spirit. (Tuck.)

Mr. John Tuck communicated a paper on this subject to the Pharmaceutical Conference.

After referring to the value of methylated spirit and the composition of wood naphtha, the author stated it to be his opinion, that wood-naphtha, once mixed with spirit of wine, could not again be separated; and that, though the characteristic odour of methylated spirit could be removed, yet the process required such cumbersome apparatus, that its use would certainly be followed by official detection. Seeing, however, that the illegal process might possibly be employed, and the revenue be thus defrauded, and the inodorous methylated spirit be used in pharmacy and in concocting liqueurs, he had searched for a test, whereby even the deodorized naphtha could be detected when mixed with spirit of wine. Such a test he had found in an

alkaline solution of the double iodide of potassium and mercury. This he made by dissolving 15 grains of biniodide of mercury and 25 grains of iodide of potassium in 1 ounce of water, and adding 10 ounces of Liq. Potassæ. On boiling a few drops of this with pure spirit of wine, a yellowish-white precipitate was formed; but when methylic alcohol was present, no such precipitate occurred. Details of the application of the test were then given. In testing flavoured spirits, tinctures, etc., it would probably be desirable to distil the suspected liquid, and apply the test to the distillate. The author added that, since completing the paper, he had found that acetone was the principle which prevented the formation of a precipitate by methylated spirit. (Pharm. Journ. vol. vi. p. 215.)

Pure Methylic Alcohol. (Reynolds.)

Mr. Emerson J. Reynolds has given a description of Pure Methylic Alcohol. He prepared the pure body in the usual manner, by decomposing crystallized oxalate of methyl by caustic potash.

It is a mobile inflammable liquid of low boiling-point, having a distinct and peculiar, though not disagreeable odour, quite different from that of ordinary alcohol, and a burning taste. No compound is formed with oxide of mercury soluble in potash. Finally, when treated with powdered hydrate of potash, and allowed to remain in contact with it for twenty-four hours, the mixture had not become in the least coloured, proving, as he thinks, that the action of Ure's test for pyroxylic spirit depends on the presence of one or other of the impurities usually existing in wood-naphtha, and not on any power which the alkali possesses of decomposing the Methylic Alcohol itself. (Pharm. Journ. vol. v. p. 369.)

Test for Chloroform. (Hardy.)

M. Hardy states that sodium, when dried by wiping it with unsized paper, does not act on chloroform, if pure; but when it

contains alcohol or ether, there is a disengagement of hydrogen. This reaction occurs without heat, and almost instantaneously. (Journ. de Pharm.)

Detection of Nitro-benzol in Oil of Bitter Almonds.

(Dragendorff.)

This test consists in acting on the adulterated oil with sodium in the presence of alcohol. Ten drops of the adulterated oil are taken, four or five drops of alcohol and a fragment of sodium are added; in proportion as the nitro-benzol is in excess a brown deposit, approaching black, will occur. This reaction is instantaneous, and when the oil contains from 30 to 50 per cent. of nitro-benzol one minute is sufficient to obtain a thick brown liquid. (Journ. de Pharm.; Amer. Journ. Pharm. vol. xxxvi. p. 420.)

Chloroform a Test for Sugar in Urine. (Cailliau.)

M. Cailliau states that when Urine containing Sugar is violently shaken with half its bulk of Chloroform the mixture becomes bulky, and will separate into two layers. The upper is clear and almost colourless; while the lower is white, thick, and gelatinous. When the upper layer is removed, and left to evaporate in a porcelain dish, the liquid becomes syrupy as it evaporates, and after some days the sides of the dish become covered with the wart-like masses of Sugar. (Journ. de Chim. Méd. vol. xi. p. 449.)

Detection of Potato or Corn Starch in Arrowroot. (Albers.)

If 1 part of pure arrowroot is shaken with 3 parts of a mixture of 2 parts hydrochloric acid, sp. gr. 1.12, and 1 part distilled water, at an ordinary temperature, for about three minutes, no reaction will be seen to occur.

If, however, corn or potato starch be treated thus, it becomes changed into a gelatinous, translucent, and finally semifluid mass. With potato-starch there also occurs a characteristic and easily recognised odour.

In the case of a mixture of these starches with arrowroot, the latter may be separated by treating the whole for two or three hours with the hydrochloric acid as above, by which the arrowroot becomes soluble and may be filtered from the remaining softish mass, which, when washed, dried in the air, and weighed, shows by the loss in weight the amount of arrowroot present. (Arch. d. Pharm. Viertelj. Ph. vol. xiii. p. 976.)

New Method of Analysing Oil Cake. (Tegetmeier.)

Mr. Tegetmeier recommends the use of sulphide of carbon in place of ether for the extraction of the oil in analyses of oil cake. Oil is now extracted commercially by sulphide of carbon. The oils obtained by this plan are of a superior quality, bright, free from albuminous and mucilaginous matters, and destitute of the slightest trace of the bisulphide.

Professor Church confirms the mode of analysis, and has adopted it as a cheap and preferable one. (Chem. and Drugg.)

Estimation of Vegetable Astringent Matters. (Commaille.)

Some vegetable matters decompose iodic acid, in the presence of prussic acid, and some do not; among the former are the astringent matters. Accordingly the author adds to a vegetable decoction some very weak prussic acid, and a measured quantity of a solution of iodic acid of known strength, and subsequently determines the amount of unchanged iodic acid. One gramme of gallic acid will destroy 2.366 grammes of iodic acid, and one gramme of tannin, 2.320 of the same. (Comptes Rendus; Chem. News, vol. x. p. 117.)

To distinguish Artificially Coloured Wines. (Blume.)

As the real colouring-matters of Wine are of different solubility in water free from tartaric acid, Blume proposes to make this fact of practical use in testing the purity of Wine. He saturates a crumb of bread in the wine and places it in a plate of water; if artificially coloured, the colour is diffused through

the water, but if naturally a slight opalescence only will be perceptible after a quarter of an hour. (Ellsmer, Chem. Mittheil.)

Process for Estimating the Value of Milk. (Hozerman.)

Hozerman takes a known weight of Milk, and heats it to boiling, puts it in a bottle, and allows it to cool to 12° or 15° Réaumur; he then shakes the bottle until the butter separates, which can be removed, drained, and weighed. (Archiv der Pharm. and C. N. vol. i. p. 245.)

Saponification of Fats by Alkaline Sulphides. (Pelouze.)

M. Pelouze has found monosulphide of sodium to completely saponify olive oil in the cold in about six days. He suggests that this, or a sulphide obtained by reducing sulphate of soda by charcoal, may be used industrially, and thinks that the low cost of this salt, in comparison with caustic soda, will allow of a little extra trouble to remove any disagreeable sulphur-compound from the soap. (Comptes Rendus.)

A new Antidote. (Ellis.)

Gelatinous silica is well known to be soluble in alkaline solutions. It is also soluble in an alkaline silicate. It is remarkable that the silicates of the earths and metals—the silicate of magnesia for example—in the gelatinous, or recently-prepared state, are readily soluble in a solution of silicate of soda, although insoluble in caustic soda. Mr. Ellis proposes to apply the solutions of these double silicates as antidotes in cases of poisoning. In the case of a mineral salt being taken, an instantaneous precipitation of an insoluble silicate would occur in the stomach, and probably without the least injurious effects to the coats thereof, by the prompt administration of a dilute solution of one of the compound soluble silicates, or of a solution of silicate of soda saturated with gelatinous silica. (Chem. News, vol. x. p. 24.)

Protection of Substances from Light. (Gibbons.)

Mr. Gibbons has suggested, as a substitute for yellow glass in photography, gelatine dissolved as usual and mixed with a hot solution of bichromate of potash. He states that this is a capital material for coating bottles intended to contain substances acted on by light; the bottle need only be dipped in a moderately strong solution. It gives a clear orange tint, is perfectly firm, and, after a little exposure to light, is not at all affected by washing. (Chem. News, vol. x. p. 252.)

PHARMACY.

On Percolation. (Redwood.)

In an elaborate and valuable paper on the preparation of tinctures, Dr. Redwood discusses at length the general applicability of the process of Percolation. He recommends the glass percolator of the York Glass Company as the most convenient apparatus for small operations, and takes the case of essence of ginger as a type to illustrate the successful application of the process.

He states the advantages and disadvantages attending percolation as follows:—

1. Economy of time. This is one of the most important advantages in this process, as a tincture may be prepared in a few hours, which by maceration would require a week or two.

2. Excellence of product. Some tinctures are considered to be better when made by this process than by lengthened maceration, because in the latter case a change may be effected in some of the soluble constituents of the solution first formed when this is left in contact with the insoluble residue of the vegetable substance.

3. Concentrated state of the product. The process is certainly well suited for getting highly-concentrated tinctures.

4. Recovery of the valuable part of the product. This is more completely effected by this process than it can be by maceration and expression.

On the other hand, there are some objections that may be urged against the process of percolation, and especially against its general application for the preparation of tinctures.

1. It requires skill and knowledge for its successful application, which can only be acquired by much experience ; whereas in making tinctures by maceration, unskilled labour, such as that of apprentices, can be applied.

2. Although the time involved in making a tincture by percolation is comparatively short, yet during the whole of this time the attention of the operator is required, whereas in operating by maceration such is not the case.

3. Although a larger proportion of the strong tincture is recovered by percolation and displacement than by maceration and expression, yet in the former case, when legitimately conducted, the last part of the tincture is only recovered at the cost of an equal volume of spirit which is used for displacement.

4. There is a strong temptation for the use of water as a displacing liquid, and great danger in using it of diluting and otherwise injuring the tincture. (Pharm. Journ. vol. v. p. 533.)

Apparatus for making Tinctures according to the British Pharmacopœia. Automatic Displacement Process. (Redwood.)

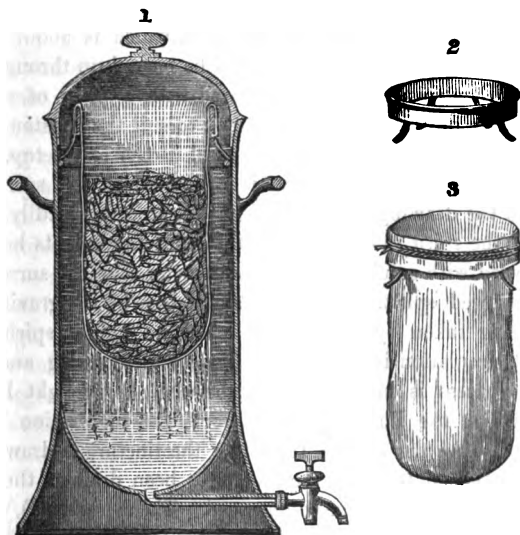
The following is extracted from the paper of Dr. Redwood, already referred to :—

In the new process of the British Pharmacopœia we have another modification of the process of maceration. In this we are directed to macerate the ingredients, with occasional agitation, for forty-eight hours with three-fourths of the spirit, then to turn the ingredients into a percolator, and when the liquid has ceased to pass, to add the remaining fourth of the spirit, and allow this to percolate through ; then to subject the contents of the percolator to pressure, and finally to make up the whole to a stated quantity by further addition of spirit. The object here seems to have been to remove the principal objection that attaches to maceration by reducing the time occupied in the process to two days, to render this period of maceration efficient by supplementing it with a process of percolation or displace-

ment, and to make the whole operation simple and easy of accomplishment by omitting those parts of the process of percolation which involve difficulty and require skill.

I have been favourably impressed with the general characters of this process from the first, and think we have here the basis of a process admirably well adapted for general adoption, involving no difficulties of manipulation, and capable of yielding uniform and satisfactory results without unduly taxing the attention or skill of the operator.

I think, however, that the process as described in the Pharmacopœia is not so complete, simple, and efficient as it is capable of being made, and among the objects I have had in view in this communication have been those of suggesting a modification in the Pharmacopœia process, and of describing a suitable form of apparatus for its application.



Automatic Displacement Apparatus.

THE AUTOMATIC DISPLACEMENT PROCESS is the name I.

propose to give to this mode of operating, which, while it practically fulfils the requirements of the Pharmacopœia, comprises the principles of Dr. Burton's process and of the process of displacement.

Commencing with the maceration of the solid ingredients in three-fourths of the spirit, I propose to effect this by suspending them in the upper part of the liquid, and thus to avoid the necessity for agitation. The apparatus I have made for the purpose is a copper vessel, well tinned inside, with a round bottom and well-fitting cover. It is furnished with a cock, so fixed that the whole of the liquid contents can be drawn off. Near the top of the vessel a wire is fixed against the inner surface for the support of the ring (2), to which the bag is to be attached, as shown at (3). The bag may be made of flannel, or other suitable material. It should be cylindrical, with a round piece sewn in at the bottom, and sufficiently long to reach nearly to the bottom of the vessel. The open end of the bag, which is about equal in circumference to the ring (2), is to be passed up through the ring, and then turned over and secured with a piece of string. The capacity of the bag may be made to suit the substances to be put into it by turning more or less of it over at the top.

Having introduced the materials, including the spirit, as shown in the drawing (1), the automatic process speedily commences; the spirit in contact with the solid ingredients becoming charged with soluble matter, and heavier than the surrounding uncharged spirit, falls through the bag by its gravity, its place being taken by fresh portions of the lighter spirit. A constant circulation is thus kept up, and a percolating and displacing process is maintained for the whole forty-eight hours, during which the Pharmacopœia directs the maceration to be continued. At the end of this time the tincture is drawn off, and when the contents of the bag have been drained, the next part of the process is to be commenced. The cylinder (4), which is open at both ends, and loosely fits within the ring (2), so that it can be introduced when the bag is in its place, is pushed down between the bag and its contents, so as to prevent the escape of

any liquid through the sides of the bag when placed over the solid mass. The remaining fourth of the spirit is now introduced, and this, percolating through, displaces the tincture held by capillary attraction in the solid ingredients, and the exhaustion of these ingredients is thus completed. When no more liquid passes, the cylinder may be withdrawn from the bag, and the bag removed from its place, separated from the metallic ring to which it is attached, squeezed with the hands so as to press out as much of the liquid as can be thus separated, and then put into the press-box of a small tincture-press for further expression. It will be found convenient to have a strong perforated cylindrical box, of tinned copper, into which the bag will fit, and which, being placed under the screw of an ordinary tincture-press, will admit of the application of this part of the process without removing the materials from the bag into which they were first put.

I have found an advantage in having the ring made as shown at (5), and supporting it on three projecting studs attached to the inner surface of the copper vessel. There may then be a second set of studs two or three inches lower down, on which the ring may be placed if it be desired to operate with a smaller quantity of spirit, or if a short bag be used which would not take the whole length of the cylinder, and would therefore leave part of it projecting upwards.*

The same arrangement may very readily be adapted to a wide-mouthed bottle or jar, by having the ring (3) supported on three wire legs, as shown in the following drawings.

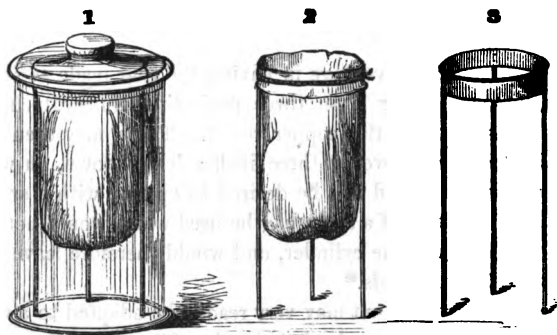
This method of preparing tinctures presents some important advantages.

It is easily performed, and occupies but little time in its performance. In these respects it occupies a position intermediate

* Mr. Coffey, the well-known Pharmaceutical Engineer, has contrived a plan for making the lid fit air-tight, by means of an india-rubber band, which entirely prevents evaporation; and he is prepared to supply the complete apparatus in three sizes, for one, two, and four gallons of tincture.

between those of percolation and maceration. Although it is not quite so simple a process as that of maceration, yet it requires less frequent attention, and is of much shorter duration.

Its automatic character renders it independent of the operator during the first part of the process, and the result is not affected therefore by the amount of attention it may receive, as it is in the ordinary process of maceration. Then, as no personal attention is required during the period of maceration, there is no temptation or excuse for any deviation from the prescribed instructions. All that is required is, that the ingredients should be bruised, or otherwise prepared as directed, and after being put into the apparatus, that they should be left there for the prescribed time. This time is not inconveniently long, nor is it difficult to keep a correct account of it in the preparation of



Automatic Displacement Apparatus.

several tinctures. There is a little card-frame attached to the front of the apparatus, into which a card is put, with the name of the tincture and the date at which the process was commenced. When the macerating time has expired the tincture is drawn off, and should be put into a bottle or other vessel that will form a measure of the quantity of tincture to be produced. In the draining of the liquid from the bag in this part of the process, the solid ingredients will pack themselves so as to be prepared for the next operation. The cylinder is now to be introduced ;

and in doing this, if the sides of the bag be slightly squeezed with the hands, there will be no difficulty in pushing the cylinder between the bag and its contents. The ingredients should then be pressed down with a rod, and the remaining fourth of the spirit poured over them. All the difficulties of the ordinary process of percolation are thus got rid of. If there be only a small quantity of solid ingredients, requiring a bag much shorter than the cylinder, the top of the latter will of course project above the ring, and as this would obstruct the fixing of the cover in its place while the ring rests on the upper studs, it will be necessary in such case to put the ring on to the lower studs. The percolation under these circumstances will take place without further attention; and when completed, the cylinder is to be removed, the bag separated from the ring, and with its contents submitted to expression. The pressed tincture, and that obtained by displacement in the previous part of the process, are to be added to the tincture first made by maceration, and the whole made up to the specified quantity by further addition of spirit.

Tinctures made in this way appear to be unexceptionable in every respect, and the process will recommend itself by its applicability to all tinctures, and to operations upon the large as well as the small scale, and also by the perfect facility with which it is performed. (Pharm. Journ. vol. v. p. 542)

The Process of Percolation, and a New Form of Percolator. (Sanger.)

Mr. Sanger states that one of the obstacles to the general adoption of the process of percolation or displacement for the preparation of tinctures, is the difficulty of reducing each drug to the most suitable state of division. When fine powders only are used, they are liable, in many cases, to swell when wetted after being packed in the percolator, and so to form an impervious mass. To obviate this difficulty, Mr. Sanger recommends mixing silver sand with the dry ingredients; this divides the

particles of the powder, and permits the process to proceed satisfactorily in every case.

The sand is to be purified by washing it with dilute hydrochloric acid, then with water, and subsequently drying it. Twice as much sand should be used as the weight of the dry ingredients. In a few cases, however, a larger quantity is required.

The Percolator recommended by Mr. Sanger is as follows :— It consists of a jar made of earthenware, with the base so rounded that any liquid poured in can be entirely drawn off without tilting the jar. Inside this jar, near the top, there are four brackets moulded in the ware, for the funnel to rest upon. The funnel is made of such a length as to reach three-fourths of the way down the jar, when resting on the brackets. The funnel is furnished at the base with a ring round it, so as to permit of the muslin and bibulous paper being tied on as in capping a bottle. It has a double rim at the edge; the outer for the purpose of resting on the brackets, and this is notched in several places, to permit of the air rising from the bottom of the vessel to the funnel above without the use of pipes; the inner rim is for the purpose of preventing the liquid in the funnel splashing over, should the jar be moved while the process is in operation, and also to enable the operator to take the funnel out with ease. Lastly, the outer vessel or jar has a grooved rim, in which the edge of the lid fits; this is filled with dry sand, which makes it sufficiently air-tight.

To use the apparatus, the funnel is removed, capped at the base, and the ingredients, mixed with their quantity of sand, packed in it. A cork having been fitted to the hole at the bottom of the jar, the funnel is replaced, the liquor poured on, and the lid fitted. The process then goes on without further labour. (Pharm. Journ. vol. v. p. 393.)

New Percolator for B. P. Preparations. (Haselden.)

Mr. Haselden has introduced a new form of Percolator, which admits of the forty-eight hours' maceration, and subsequent per-

colation, as ordered by the British Pharmacopœia, being carried on in one vessel. It is made of block tin, and is in the form of a cylindrical vessel, with a tap at the bottom, and furnished with a moveable perforated diaphragm, about two inches from the bottom, resting upon four supports. The ingredients are placed upon this diaphragm, and three-fourths of the spirit poured on, as directed; a portion passes through, and fills up the space between the bottom of the percolator and the diaphragm, so that the material, while macerating, is surrounded by the liquid; it can be well stirred during this primary part of the process. At the expiration of the forty-eight hours, the tap is turned, and the tincture or liquor allowed to pass through into a glass receiver, of almost any size, fitting the tap by means of a shive; that complete, the second perforated diaphragm is placed upon the top of the material, and the remainder of the liquid added. This having ceased to percolate through, the marc, as directed, is taken out, pressed, and the liquid mixed with the other portion, and the quantity of spirit added to make up the full measure of one or two gallons, as the case may be. (Pharm. Journ. vol. v. p. 441.)

On the Processes for Preparing some of the Tinctures of the Pharmacopœias. (Savage.)

Mr. W. D. Savage made a communication on this subject to the Pharmaceutical Conference.

The author had experimented upon twelve different tinctures, making four specimens of each, by four different processes. In all cases the four specimens were made from the same parcel of raw material, at the same temperature, and with the same spirit. The first process was maceration for twenty-one days; the second, maceration for seven days; the third, maceration for forty-eight hours, with subsequent percolation; the fourth, twenty-one days' maceration, with the addition then of percolation. The relative value of these processes was ascertained by evaporating a similar portion of each tincture over a sand-bath and weighing the residue. The whole of the results were given in a

tabular form. The author considered that maceration with subsequent percolation yielded the best results, and that the period of maceration should, as a rule, be not less than fourteen days. (Pharm. Journ. vol. vi. p. 254.)

The Tinctures of the B. P. compared with those of the three Pharmacopœias. (Ulrick.)

Dr. C. Ulrick gives a table comparing the strengths of tinctures and wines of the old Pharmacopœias with the new. (Pharm. Journ. vol. v. p. 498.)

Value of Marc from Tinct. Opii. (Davis.)

Mr. B. H. Davis records the following experiment :—The dried marc from three gallons of Tinct. Opii weighed $13\frac{1}{4}$ ounces, being the product of 36 ounces of opium in coarse powder. It yielded 56 grains of pure hydrochlorate of morphia. (= 42 grains morphia). (Pharm. Journ. vol. v. p. 462.)

Tincture of Mustard. (Barbet.)

A solution of volatile oil of mustard in alcohol is known as a good rubefacient. The tincture may be procured more economically by macerating during two hours 250 parts of black mustard flour in 500 parts of cold water, and adding afterwards 125 parts of alcohol at 86° C., and distilling 125 parts over. This distillate will be found to possess a decided rubefacient action. (Journ. de Pharm. de Bordeaux.)

Tincture of Myrrh as a Vehicle for Creasote. (Morris.)

A drachm of Tincture of Myrrh will hold in permanent solution 8 or 10 minims of Creasote in a half a pint of water. The addition of the Myrrh is generally no drawback; as, when administered internally, it increases the tonic effect of the Creasote, and when externally, the antiseptic power. (Brit. Med. Journ.)

Extracts of Calumbo and Liquorice, B. P. (Haselden.)

Mr. Haselden, in an elaborate paper, takes exception to the Brit. Pharm. process for making extract of calumbo. The Brit. Pharm., after describing the processes of maceration and percolation previously to evaporating down, omits to provide for the displacement of that portion of the spirit which remains absorbed in the marc, either by a weaker spirit or water, or by the simple operation of expression as directed in the preparation of tinctures.

There results, therefore, a product of one ounce and a half of extract, in appearance somewhat resembling leather, and at a cost of something like two shillings an ounce when made on the small scale.

Mr. Haselden proceeds to show that if hot water at a temperature of 160° F. is passed through the marc until it (the water) loses its bitterness, there will be obtained, on evaporating the liquid, another ounce and half of extract, making in all three ounces obtained from sixteen ounces of root.

Mr. Haselden believes that there is nothing in the composition of calumbo which requires spirit for the extraction of its bitter. The bitter matter is soluble in cold water, and he had been in the habit of making the extract of calumbo by pereolation with cold water for some time. The product averaged from two and a half to three ounces of extract from one pound of root. Mr. Haselden had also prepared a very creditable extract by percolation with boiling water; the product being three-quarters of an ounce increase on the quantity obtained by the cold water process. The results of the three processes stand thus:—

Brit. Pharm. Process .	1½ oz.	from 1 pound of root.
Cold Water	2½	" "
Boiling Water . . .	3½	" "

Mr. Haselden considers that the absence of starch in the extract and infusion of calumbo is a disadvantage, inasmuch as starch possesses demulcent properties which adds to its therapeutic virtues. The presence of starch also renders the preparation of pills easier.

Mr. Haselden then adverts to the process for *Extractum Glycyrrhizæ*, and states at some length his experience of the different pharmacopœial methods for its preparation. He states that by percolation with cold water, 15 per cent. of extract is obtained at a cost of 4*s.* 6*d.* per pound; by decoction, and straining when cold, 22 per cent., at 3*s.* per pound; by decoction, and straining while hot, 35 per cent., at 2*s.* per pound. (*Pharm. Journ.* vol. vi. p. 304.)

***Extractum Kramerizæ*, B. P. (Haselden.)**

Mr. Haselden had his attention drawn to the fact that there has been a great scarcity of the genuine Peruvian krameria, and that a year ago it was not to be obtained at all. He therefore compared preparations made with true Peruvian rhatany, and those made with rhatany imported from Savanilla in New Granada, which is obtained from a different species of krameria. Mr. Haselden considered the process of the *Brit. Pharm.* for the preparation of extract a good one, and he believed that there was but little difference between the two roots. Two pounds of the Peruvian root yielded three and half ounces of astringent extract. Two pounds of Savanilla root yielded four and half ounces of extract as astringent as the former. The extract must be evaporated to dryness, or it becomes mouldy. A fluid ounce of tincture made from Peruvian rhatany yielded 14 grains of dry extract, the same quantity made from Savanilla root yielded 15 grains of extract. Mr. Haselden came to the conclusion, in which he was confirmed by Professor Bentley and Mr. Hanbury, that Savanilla root as a remedy is quite equal, if not superior, to Peruvian root. (*Pharm. Journ.*)

***Extractum Lupuli*. (Haselden.)**

Mr. Haselden commends the process of the *British Pharmacopœia*, although he thinks that the quantity of spirit might be increased with advantage. In two operations, using one pound of hops in each, he found that the first yielded an ounce and a

half of soft extract ; the second yielded two and a half ounces, making together four ounces of a soft extract, which had a fine odour and an intensely bitter taste. The process of the London Pharmacopœia yielded a rather larger quantity of extract. Sixteen ounces of the spirit, very agreeably flavoured with the hop, was recovered in the distillation directed by the British Pharmacopœia. (Pharm. Journ.)

**Crystalline Deposits in Extracts from Aconite and
Veratrum viride. (Krehbiel.)**

In 1853, Schroff noticed the appearance of crystals of cane-sugar in extracts of different species of *Aconitum*. M. Krehbiel, having accidentally met with crystals in strong alcoholic extracts of aconite and *Veratrum*, was induced to examine them, and, after the application of proper tests, came to the conclusion that they consisted of cane-sugar with probably a small quantity of a compound of sugar with lime. Schroff found that the alcoholic extracts of the roots, collected in the fall of the year, yielded more sugar than those collected in June or July, but the latter proved more active. (Amer. Journ. Pharm. vol. xxxvi. p. 298.)

Estimation of Copper in Vegetable Extracts, etc. (Hager.)

The substance to be examined is dissolved in water containing acetic acid, and in the acid liquor is immersed a stout platina wire, carrying at its lower end a piece of iron wire. If copper is present, after one to three hours' immersion, it will be deposited upon the platina as a brownish coating, which is then removed to a test-tube in which has been placed four or five drops of pure nitric acid. The copper thus dissolved is made evident by its producing a blue colour with an excess of caustic ammonia.

In this manner the presence of the metal has been detected in solutions in which neither ammonia nor ferrocyanide of potassium gave any reaction.

This method is recommended as particularly applicable to vegetable extracts and juices, in which, on account of tannic acid and similar matters, iron alone gives but doubtful results. (Ph. Centralhalle; N. Jahrb. Ph. vol. xx. p. 22; Amer. Journ. Pharm. vol. xxxvi. p. 421.)

Distilled Waters. (Brown.)

In the course of a paper on Medicated Waters, Mr. Brown recommends a method of digestion for making Medicinal Waters. He placed Distilled Water and an essential oil, in suitable proportions, in a strong stone bottle, immersed this in a water-bath, agitated occasionally, and when the contents of the bottle reached a temperature of 203° to 206° , securely corked it, and continued the heat for half an hour. The method appears quite rational; the diffusion of the oil is promoted by the currents in the heated fluid, and the increased pressure within the bottle has also a further influence. The specimen of peppermint water thus prepared had a strength superior to that usually found. (Pharm. Journ. vol. v. p. 355.)

Preparation of Rose Water. (Monthus.)

The author states that the petals of the hundred-leaved rose are more odorous as the centre of the flower is approached, and that it might be inferred from this that the rejection of the calyx and exterior petals would improve the product distilled from the remainder. On the contrary, M. Monthus finds that the presence of these organs not only does not injure the quality of the product, but ensures its preservation. When thus prepared, Rose Water is less subject to be filled by mucilaginous matter, which is the source of the alteration of this liquid.

M. Monthus attributes this effect to the astringent principle contained in the calyx, which has a coagulating influence on the albuminous matter, and prevents its being carried over in the distillation. (Rép. de Pharm.; Amer. Journ. Pharm. vol. xxxvi. p. 114.)

Camphor Water as a Solvent of Salts. (Morris.)

It is more convenient to measure a liquid than to weigh a solid ; many salts are therefore kept in solution, but they are, at the same time, very bad keepers. A very simple and efficacious mode of keeping them is to employ *Aqua camphorata*, *i. e.* a saturated solution of camphor in water, as the solvent ; the placing of a piece of camphor in the solution previously made with pure water is equally good. (Brit. Med. Journ.)

**The Administration of Bismuth in the Soluble Form,
Liq. Bismuthi. (Tichborne.)**

Mr. Tichborne has made an analysis of the Liq. Bismuthi sold by Mr. Schacht. This preparation is an *alkaline* solution containing bismuth ; it possesses only a slight taste, and is not precipitated by water. It consists of oxide of bismuth dissolved in citrate of ammonia. One drachm contains one grain of oxide of bismuth.

Mr. Tichborne considers the proportions of bismuth in Mr. Schacht's preparation to be too small ; he therefore gives the following process for preparing the liquor of treble the strength, *i. e.* three grains of oxide in one drachm. 430 grains of metallic bismuth are dissolved in a sufficient quantity of nitric acid, and this solution of trisnitrate of bismuth is then precipitated by ammonia, and the resulting hydrated oxide well washed ; 480 grains of citric acid are then exactly neutralized with ammonia, and the moist oxide is gradually added to the boiling solution of citrate of ammonia. The oxide is slowly but perfectly taken up. Ammonia is slightly evolved during the boiling, but the solution becomes slightly acid, and remains so until the completion of the process. The solution is then neutralized with ammonia, and the whole is made to measure one pint.

Mr. Tichborne states that the Liquor may be more elegantly made by dissolving citrate of bismuth in citrate of ammonia. Citrate of bismuth is a very insoluble salt, got by the double decomposition of citrate of potash or soda and nitrate of bismuth.

The citrate thus made is extremely soluble in ammonia or citrate of ammonia. (Pharm. Journ. vol. v. p. 301.)

Liq. Potassæ as a Solvent for the Gum Resins. (Morris.)

Solutions of gum resin in Liq. Potassæ recommend themselves for their elegance and economy, while they are generally very effective. For instance, the dilution of Liq. Potassæ and ammoniacum with water is perfectly clear, whereas a tincture produces an opaque mixture. The alkaline solutions of aloes, catechu, and kino are very cheap and elegant colouring-matters, a few drops giving a deep tint to half a pint of water.

The quantity of Liq. Potassæ best adapted for each gum resin will be found to be as follows :—

Aloes	1 part to 15	Liq. Potassæ.
Ammoniacum . .	1 „ 4	„
Assafoetida . .	1 „ 10	„
Catechu	1 „ 10	„
Guaiacum	1 „ 7	„
Myrrh	1 „ 5	„
Opium	1 „ 10	„

(Brit. Med. Journ.)

On Liquor Ferri Perchloridi, B. P. (Utley.)

Mr. Utley states that the process given in the Pharmacopœia for this preparation does not yield the product described, but furnishes a dark liquid containing protosalt and nitric acid.

He recommends that 12 instead of 10 ounces of hydrochloric acid be used, the additional 2 ounces being added after the iron is dissolved and the liquid filtered.

The remainder of the operation may be conducted as ordered. A satisfactory product is thus obtained. (Pharm. Journ. vol. vi. p. 24.)

Liquor Ferri Perchloridi, B. P. (Miller.)

Mr. J. T. Miller differs from Mr. Utley in his comments on the process for this preparation. He finds the quantity of acid

ordered to be sufficient to produce a perfect persalt. He admits, however, that part of the iron is present as perntrate, but considers this of no importance.

A quantity of liquor prepared from 2 ounces of iron he found by analysis to be composed thus :—

Perchloride of Iron	15·21	grs.
Perntrate of Iron	17	„
Nitric Acid ($3\text{H}\text{O}$, $2\text{N}\text{O}_5$) . .	47	„
Water sufficient to make . . .	1002	„

(Pharm. Journ. vol. vi. p. 331.)

On the Preparation of Small Quantities of Concentrated Infusions. (Grundy.)

Mr. Grundy read a paper on this subject before the Pharmaceutical Conference.

The finely comminuted materials are infused in the requisite quantity of boiling water, and the mixture then percolated in a little jacketed tin percolator, kept hot by a current of steam from a small tin boiler. The first portion of the product is set aside, and the second and third reduced in bulk by evaporation. The three are then mixed, and spirit added, in the proportion of three to seventeen. Two or three of the infusions require special preparation; linseed cannot be so treated, and infusions requiring temperatures between those of cold and boiling water require the aid of a thermometer. (Pharm. Journ. vol. vi. p. 259.)

Infusum Cinchonæ Spissatum. (Brew.)

Messrs. Brew and Co. recommend the following process for this preparation :—Reduce the bark to a uniform powder, passing it through a sieve of fifty meshes to the inch; mix it with *distilled* water, so that after twenty-four hours' digestion it shall form a paste; then add sufficient water to completely cover the bark to the depth of an inch; allow it to stand for four days at a temperature of 55° to 60° , stirring thoroughly at intervals; strain the liquor off, press the residue strongly, add more water,

and macerate for two days; strain, press, and finally macerate again for the same period; then strain and press strongly. Evaporate the mixed liquors over a bath at a temperature of 170° , until reduced to a specific gravity of about 1.200. The setting aside of the liquors, when partially evaporated, to deposit, seems to be of very little importance or advantage.

The infusion obtained as above, does not require more than fourteen days for the dregs to subside, as it is generally perfectly bright, even at the expiration of a week; but a longer time renders it less likely to deposit when bottled. The sp. gr. of the liquor when reduced to the strength of one drachm, equivalent to one ounce of bark, is generally about 1.150, although, of course, varying slightly, according to the quality of bark employed. (Pharm. Journ. vol. v. p. 328.)

Linimentum Aconiti, B. P. (Donovan.)

Mr. Donovan has made some interesting experiments on the relative value of Aconite Liniment when made from the fresh root, or from the dried root as ordered by the British Pharmacopœia. He was led to investigate the matter by several facts, showing that Aconite loses much of its activity by drying. Tinctures of the dried and undried roots were prepared. A piece of lint soaked in the tincture of the fresh root was laid on the forehead, and left on for an hour and a half. The first impression produced was cold, afterwards changing to that of heat; after a while it increased to painful smarting, great tightness of the skin was felt, followed by a creeping sensation, and ultimate loss of feeling in the part. A lady repeating the experiment obtained the same result. The effects of the fresh root were thus very decisive.

The pharmacopœial preparation was next tried. It produced a partial tickling, but no smarting, heat, or sense of pressure. The application was continued three times longer than in the former case, although the effect was so much weaker. The recent roots were macerated for twenty-four hours only, but the powder

of the dry roots had been macerated for seven days. In none of the trials had the camphor been added. A liniment made from the leaves was also tried, but the effect was weaker than that produced by the roots. (Dub. Med. Press, and Pharm. Journ. vol. vi. p. 57.)

Emplastrum Hydrargyri, B. P. (Blunt.)

Mr. Blunt having tried the new process for this preparation failed to get a good result. He recommends substituting for the oil and resin the same weight of Venice turpentine; the proportion of the mercury is thus preserved, the metal is much more easily divided, and the resulting plaster is of good consistence. (Pharm. Journ. vol. vi. p. 56.)

Emplastrum Ammoniaci c. Hydrargyro ; and Emp. Galbani.
(Donovan.)

The formula given in the B. P. for Emp. Ammon. c. Hydrarg. is to extinguish the mercury, by oil slightly sulphuretted, and to add to the mixture the ammoniac, *previously liquefied*, mixing the whole carefully.

Mr. Donovan considers the direction given to liquefy the ammoniac impracticable; even if it were possible to melt the ammoniac, there would still be the objection, that that substance is so full of impurities, particles of wood, gravel, etc., that the plaster would be difficult to spread. Mr. Donovan has found the following method to answer very well:—

The ammoniacum is to be powdered and sifted; the impurities are thus removed. The mercury is to be rubbed to extinction in an iron mortar, with one-twelfth of its weight of turpentine, small occasional additions of a few drops of spirit of turpentine being made. The mortar is then to be heated to about 200°, a small quantity of the powdered ammoniac is to be thrown in, and the trituration resumed. The ammoniac softens and unites with the turpentine. The mixture is now capable of imparting softness to a further addition of ammoniac, and in this

way the whole of the ammoniac may be added in successive quantities, mixing well after each.

In regard to Galbanum Plaster, we are directed to melt the galbanum and ammoniac together and strain. Mr. Donovan observes that as neither of these substances can be melted by heat, the mixture cannot be strained. (Dub. Med. Press, May 4, 1864.)

Preparation of Breast Plasters. (Parrish.)

The author, after referring to the constant demand for suitable emollient, sedative, and stimulant plasters to be used in inflammation of the female mammæ, alludes to an old remedy known as Logan's Plaster. This plaster is made by boiling together pure Castile soap, oxide and carbonate of lead, olive oil, and butter (without salt), till the proper consistence of a plaster is attained, and then adding a little mastic. Though similar to the simple diachylon plaster, this is of a more emollient character, freer from the tendency to become dry and brittle upon the surface, and, by its consistence, adapted to be spread and applied without the application of more than a very moderate heat.

The author then gives a modified formula for a plaster, known as Dr. Dewee's Breast Plaster, as follows:—

Take of Lead Plaster	. . . . .	3 oz.
Ammoniac Plaster	. . . . .	$\frac{1}{4}$ oz.
Logan's Plaster	. . . . .	1 $\frac{1}{4}$ oz.
Spermaceti	} of each	2 drms.
Camphor		

Melt the plasters together, then add the spermaceti and camphor, and remove from the fire.

While the author deprecates the use of ointments and cerates on the breast as substitutes for plasters, he speaks somewhat favourably of the following form:—

Improved Tobacco Ointment.

Take of Tobacco Leaves	. . . . .	5 oz.
Vinegar	. . . . .	1 quart.

Digest the leaves in the vinegar till evaporated to half a pint; strain and express the liquid, then evaporate by moderate heat to about three fluid ounces; triturate with

Extract of Belladonna . . 1 oz.

Then—

Take of Camphor, in powder . . 6½ drms.

Resin Cerate 6½ oz.

Mix these by fusion at a moderate heat, and incorporate them with the mixed extracts of tobacco and belladonna.

Another form is given under the title of—

Dissolving Salve for Breasts.

Take of Extract of Belladonna } . ½ drm.
Extract of Conium }

Tannin. 1 „

Soap } . . . 3 drms.
Simple Cerate }

Mix together the cerate and tannin; dissolve the soap in a little water by a gentle heat, add to this the extract previously rubbed down with a little water; then mix rapidly on a warm slab the two parts together. #

Mr. Parrish concludes with some remarks on patterns for breast plasters, as also on the methods of spreading and materials employed, all of which English pharmacutists are more or less acquainted with. (Amer. Journ. Pharm. vol. xxxvi. p. 114.)

On Unguentum Hydrargyri Nitratis, B. P. (Boucher.)

Mr. Boucher takes exception to what he thinks is a vague process for making Unguentum Hydrargyri Nitratis in the British Pharmacopœia. He objects that in consequence of the mode of heating indicated, the product consists of a granulated chocolate-coloured ointment, varying in colour and consistence according to the exact degree of heat attained,—this point being left undecided by the Pharmacopœia. Mr. Boucher thinks that a specified temperature is necessary in the place of the word “hot,” which may occasion the production of a bad ointment. His ex-

perience leads him to fix the best temperature for mixing the acid nitrate with the melted lard and oil at 150° , or, if operating largely at 145° , or a little lower; beyond this, however, he never succeeded in obtaining a satisfactory result. At a heat of 145° to 150° the decomposition commences slowly, proceeds rapidly, but continues controllable till perfected, resulting in an ointment of fair colour, nice consistence, and one that will keep well,—though not equal in these respects to where an equivalent of weaker acid is employed in its manufacture.

If an acid sp. gr. 1.42 be used, the Brit. Pharm. process answers well. It is generally understood that an acid of this strength was originally intended.

Spiritus Ammoniae Aromaticus, P.L. (Fewtrell.)

The Aromatic Spirit of Ammonia of the London Pharmacopœia was directed to be made with such proportions of carbonate of potash and chloride of ammonium as it was supposed would produce a neutral Carbonate of Ammonia in solution in a mixture of spirit of wine and water with flavouring substances.

The specific gravity of the product was ordered to be .918. Mr. W. T. Fewtrell, F.C.S., has made some experiments with a view to determine in what state the ammonia exists in this preparation.

For this purpose the proportions of the Pharmacopœia were distilled, and the products fractionized into seven portions.

The first three portions deposited crystals; these were found to consist of bicarbonate of ammonia. The liquid portion from which the crystals were deposited contained monocarbonate of ammonia and one per cent. of free ammonia.

The finished product (in which all the fractional portions were mixed together, when, of course, the crystals dissolved), contained monocarbonate of ammonia, with .38 per cent. of free ammonia. It follows that Aromatic Spirit of Ammonia made in strict accordance with the directions of the London Pharmacopœia, contains free ammonia. Mr. Fewtrell also shows that

its sp. gr. may legitimately be as high as .938. (Chem. News, vol. ix. p. 5.)

Nitrite of Soda. Sweet Spirits of Nitre. (Fieldhaus.)

The author believes that the conversion of nitrates of alkalies into nitrites is best effected by melting with metallic lead. Four ounces of nitrate of potash, with an equal weight of lead, are melted together in an iron pan to a dull red-heat, with constant stirring, and the addition of about an ounce of lead. After the lead is mostly oxidized, it is heated to strong redness. The undecomposed nitrate is separated by crystallization, and the oxide of lead remains as a very fine powder.

To prepare the nitrous ether, the solution of the nitrite is allowed to flow steadily into a mixture of alcohol and sulphuric acid; or, on the other hand, the acid mixture may be added gradually to the nitrite in pieces the size of a nut. The nitrous ether begins to form immediately without the aid of heat. From 500 grammes fused nitrite of potash and 500 grammes sulphuric acid, alcohol and water, there may be obtained 255 grammes nitrous ether. It is somewhat acid, but may be neutralized in the usual way. The author considers this process an economical one for the production of sweet spirits of nitre, which contains from 1 to 5 per cent. of this ether. (Ann. Chem. und Pharm. vol. cxxvi. p. 71; Amer. Journ. Pharm. vol. xxxvi. p. 312.)

Tyson's Process for Blue Pill.

Dr. Attfield, in a lecture on the British Pharmacopœia, quoted Tyson to show that protoxide of mercury makes a more satisfactory Blue Pill than the metal, and referred to Tyson's process for preparing that oxide, which consists in treating calomel first with potash, and afterwards with a little ammonia. Dr. Aldridge has pointed out that this process yields an oxide contaminated with a chloramide of mercury, which is poisonous. (Pharm. Journ. vol. vi. pp. 21 and 56.)

On the Purity of Commercial Powders of Ipecacuanha, Jalap, and Opium. (Rimington.)

Mr. Rimington reported on this subject to the Pharmaceutical Conference.

The indications relied on were principally microscopic, to which was added estimation of amount of ash, not assuming that variation in the latter particular would be proof of adulteration, but considering that such a series of estimations would be collaterally interesting. Eleven samples of ipecacuanha from different localities were examined; all appeared to be genuine, and the amount of ash was tolerably constant, ranging from 2·5 to 3·7 per cent., except in one case, where 7 per cent. was found. Nine samples of jalap had also been examined; seven of them appeared genuine, the amount of ash ranging from 5·5 to 6 per cent., while two contained an abnormal amount of woody fibre, and in these the ash was reduced to 3·5 and 4 per cent. respectively. Of eight samples of powdered opium, six were found to contain varying quantities of starch; the percentage of ash was pretty constant, from 5 to 6·5, the variations being independent of the presence of the starch. The author regards the starch as an impurity in the opiums imported, having met with it in this form. (Pharm. Journ. vol. vi. p. 275.)

Syrup of Chloroform—Chlorodyne. (Groves.)

To permanently suspend chloroform in a syrup or aqueous liquid, Mr. Groves proposes to reduce the gravity of the chloroform by the addition of ether until it attains the density of the menstruum it is in. The syrup should be composed of gum and sugar, of honey or treacle; syrup of sugar does not answer well. Mr. Groves proceeds:—

The *modus operandi* is as follows:—Put into a twelve-ounce bottle one ounce of chloroform and about three drachms of ether; to the mixture add the same volume of the syrup to be employed; observe carefully the disposition of the fluids, the chloroform and ether will probably sink, then add *guttatim* more

ether until the two liquids on being shaken together appear indifferent as to their position in the system; finally, fill up the bottle with the syrup, and shake well for a minute or two.

I will conclude by proposing the following form for an anodyne containing chloroform (founded on one published by Dr. Ogden), which will be found to remain combined and to mix readily with either spirit or water :—

Take of Chloroform	℥iv.
Ether	℥iss.
Oil of Peppermint	gtt. viij.
Resin of Cannabis	gr. xvj.
Capsicum	gr. ij.

Macerate for two or three days, and filter. (No. 1.)

Then take of Muriate of Morphia	gr. xvj.
Hydrocyanic Acid, Sch.	ʒi. xcvj.
Perchloric Acid,	
Water	aa ʒss.
Syrup of Treacle (or Honey), to make in all 4 oz.	

Dissolve the muriate of morphia in about an ounce of syrup, to which has been added the perchloric acid and water, assisting solution by a water-bath, and when cold add the prussic acid.

Here, as it is absolutely necessary to preserve the relative proportions of these potent medicines, and also to include them in a given bulk, the manipulation is not so easy. It is only to be done, so it appears to me, by balancing separately the chloroformic tincture with the morphia syrup, and then again with a plain syrup to be used in making up the exact measure of the completed article. The balancing must be effected by adding water *guttatim* to a syrup denser than necessary. Then having ascertained by the balance the proportions required, quantities of the *same* materials, no matter how great, can at once be adapted for use without further trouble.

Preparation of Calomel, B. P. (Donovan.)

Mr. Donovan points out what he considers a defect in the

process given by the British Pharmacopœia for the preparation of calomel.

To obtain calomel by this process, it is first necessary to prepare the sulphate of the peroxide of mercury by boiling together mercury and sulphuric acid. The product of this action, however, may be either a sulphate of the protoxide or of the peroxide, or a mixture of both, depending on the quantity of acid employed, and the heat applied. Mr. Donovan shows by experiment, that the quantity of acid ordered by the Pharmacopœia is insufficient to convert the whole of the mercury into persalt. To effect this, one part of mercury requires, at the very least, 1.5 parts of acid; the quantity ordered is only 1.11 parts. The consequence is, that the sulphate obtained, containing some protosalt, when rubbed with the mercury is incapable of combining with the whole of it, and the sublimed product is contaminated with metallic mercury.

Mr. Donovan recommends the adoption of the process of precipitation as the best pharmacopœial method for obtaining calomel. (Dub. Med. Press, May 18, 1864.)

On the Preparation of an improved Wine of Iron. (Draper.)

Mr. H. N. Draper, F.C.S., and Mr. J. Whitla, read a paper on this subject before the Pharmaceutical Conference.

The authors first described their observations on the action of light in promoting decomposition of the officinal wine of iron. To prevent this decomposition, which occurs even in the dark, they suggested that ammonio-citrate of iron should replace potassio-tartrate, and that citrate of ammonia should also be added, to prevent any slight precipitation that might otherwise occur when the wine was exposed to strong sunlight. The formula proposed was as follows:—

Ammonio-citrate of Iron . .	160 grs.
Crystalline Citrate of Ammonia	60 „
Sherry	1 pint.

The wine thus prepared was perfectly transparent, and had no disagreeable taste. (Pharm. Journ. vol. vi. p. 277.)

On Commercial Wine of Iron. (Sutton.)

Mr. F. Sutton has examined a number of samples of *Vinum Ferri* sold in London, and reported the results to the Pharmaceutical Conference. He states that the results obtained seem to point to the conclusion that where the amount of sugar in the sherry is largest, the amount of iron dissolved is, generally speaking, less than when a small proportion of sugar is present. Mr. Sutton considers that the method given in the Brit. Pharm. ensures a more uniform amount of iron. He states that the muddiness which gradually forms in the wine so made consists of a basic tartrate of protoxide of iron, which slowly forms and deposits. (Pharm. Journ. vol. vi. p. 279.)

The Pharmacopœial and Beaufoy's Acetic Acids. (Deane.)

Mr. Deane has directed attention to the singular confusion arising from the varying strengths of acetic acids ordered by the three Pharmacopœias and employed by Pharmacutists.

He shows that, for many years previous to the first introduction of strong acetic acid into the Pharmacopœia, which took place in 1824, Messrs. Beaufoy's acid 1 to 7 had made its way into general use. Pharmacutists have continued to use it from that time to this, and have very generally overlooked the fact that it is considerably weaker than the officinal acid. The Acid. Acet. Dil. made from Beaufoy's acid 1 to 7 has a strength equal to 3 per cent. The dilute acid of the London Pharmacopœia, however, has a strength equal to 4·6 per cent.

Messrs. Beaufoy prepare an acid, which is known as 1 to 9, which is of the same strength as the Acid. Acet., P. L. By diluting 15 parts by weight of this acid with 85 parts of water, or 23 fluid drachms in 20 fluid ounces, the Acid. Acet. Dil., P. L., is obtained. (Pharm. Journ. vol. v. p. 297.)

Amount of Quinine in Citrate of Iron and Quinine.

(Braithwaite.)

Mr. J. C. Braithwaite made a report on this subject to the

Pharmaceutical Conference. He found that pure citrate of quinine, as prepared by himself, contains sixty-four per cent. of quina.

The British Pharmacopœia directs that citrate of iron and quinine shall contain sixteen per cent. of quina. Mr. Braithwaite prepared some of this salt in strict accordance with the Pharmacopœia process, and found the product to contain between fourteen and fifteen per cent. of quina.

In fifteen samples of commercial citrate of iron and quinine, the proportion of quina varied from 1.5 to 15.8 per cent. (Pharm. Journ. vol. vi. p. 280.)

On the Extraction and Preservation of Aromata. (Tichborne.)

Mr. C. R. C. Tichborne, F.C.S., Chemist to the Apothecaries' Hall of Ireland, read a paper on this subject before the Pharmaceutical Conference.

Observing the preservative powers of glycerine for vegetable substances, the author packed different kinds of scented flowers in jars, and covered them with glycerine. In this way he had kept some for two years. If flowers, etc., so preserved be pressed, it is found that the glycerine has absorbed all the volatile oil, and when diluted and distilled furnishes a water in all cases superior to that from flowers preserved by salt. If the odoriferous glycerine be diluted and agitated with oils or fat, ointments, etc., of excellent quality are produced. In all these cases the glycerine is recovered by mere evaporation of water from it. The delicate oils of orange, jasmine, heliotrope, etc., are best isolated by steeping the flowers in the glycerine, pressing, and again steeping more flowers, and so on; finally diluting with water and shaking with chloroform, which removes the oil. The low boiling-point of the chloroform admits of its being separated from the oil by a temperature which does not injure the oil. (Pharm. Journ. vol. vi. p. 206.)

Rancidity of Fats. (Groves.)

A very valuable paper, on this subject, was read by Mr. T. B. Groves, at the last meeting of the Pharmaceutical Conference. Mr. Groves considers that rancidity is due to the joint action of air, water, albuminous matter, and a moderate degree of heat. He finds the best chemical test for rancidity to be iodide of potassium, which, when mixed with fat in the least degree affected, quickly assumes an orange colour, indicative of the presence of free iodine, the tint being directly proportional to the amount of rancidity. Acidity cannot be relied on as the index, for it will be found, that whereas a highly rancid fat when boiled with alcohol yields a solution reddening litmus, a mixture of rancid and neutral fat yields a negative result.

When benzoinated lard was first introduced, Mr. Groves applied it with success to the preparation of all ointments containing metallic oxides. Surmising that the oil of the benzoin was the really active agent, he commenced a series of experiments with a large number of essential oils. He mixed these, in the proportion of four drops to the ounce, with some ordinary fresh red precipitate ointment. This ointment was selected because an alteration in its colour marked the progress of rancidity,—the oxide being reduced, *pari passu*, with the oxidation of the fat. He found that all the essential oils exercised a certain preservative influence, but not to an equal degree; the oils of clove and pimento being very decidedly superior to many of the others. Sassafras, balsam of Peru, and creasote were equally efficient. The plain ointment became discoloured in eighty-five days, while those containing clove and pimento have kept in willow boxes for three years, and are still perfectly good. Similar experiments were then made, using two drops of essential oil to the ounce, and were attended with equally satisfactory results. From those ointments which had been so long preserved by oil of pimento, a portion of the fat was recovered by benzol, and tested with iodide of potassium: a perfectly neutral reaction was obtained.

It results that oil of pimento, which appears adapted for the

purpose, is a useful, agreeable, and easily applied remedy for preventing, or very much retarding, rancification in fats and fatty mixtures.

Mr. Groves also tried some experiments on the best means of preparing lard, by submitting it to varying degrees of temperature. They go to prove that it is not advisable to push the heat beyond that of the water-bath, nor maintain it too long at that temperature.

Mr. Groves considers the British Pharmacopœia process, where the flare is melted by a water-bath, the fat strained from the membrane as soon as possible, and then dried by a water-bath, to be an excellent one. He suggests, in addition, the advisability of adding to the product oil of pimento, or balsam of Peru, in the proportion of two drops to the ounce, before placing it in stock. (Pharm. Journ. vol. vi. p. 269.)

The Recovery of Essential Oils from their Watery Solutions. (Groves.)

Mr. T. B. Groves recommends the following modification of M. Piver's process for removing a volatile oil from aqueous solution:—

To the aromatic water is added about one-eighth its volume of olive oil, and the two *emulsed* by solution of potash. After standing for some time, the emulsion is destroyed by the addition of an acid; the oil immediately rises to the surface, dragging with it almost the whole of the aroma. From the fatty oil the aromatic oil may be easily separated by agitation with rectified spirit. (Pharm. Journ. vol. v. p. 347.)

Atropized and Calabarized Gelatines. (Hart.)

The usual mode of applying a solution of Calabar bean or atropia to the eye is by dropping it in. Mr. Stretfield, conscious of the inconvenience of this, saturated small pieces of paper with the solution, and placed them beneath the eyelid. This plan was also inconvenient, as it necessitated the subsequent removal

of the papers. Mr. Ernest Hart has introduced a new and convenient mode of employing the remedy.

The solution of Calabar bean is mixed with gelatine, and then evaporated, so as to leave an exceedingly thin film. This film is then cut into minute circular disks, about the size of this letter O.

One of these is placed beneath the lid of the eye; the eye is then closed, the gelatine speedily softens, and the remedial agent is slowly dissolved and absorbed.

Gelatine disks are also prepared with belladonna. These may be made of various strengths, containing respectively $\frac{1}{100000}$ th, $\frac{1}{100000}$ th, and $\frac{1}{100000}$ th of a grain of atropine. (Chem. and Drugg., May, 1864.)

On Drops. (Guthrie.)

Mr. Guthrie, professor of chemistry and physics at the Royal College, Mauritius, has made to the Royal Society an elaborate communication on drops, from which we extract portions which have some practical interest to pharmacutists and prescribers.

When a liquid drops from a solid through a gaseous medium, as atmospheric air, it may be asserted that a drop of the liquid will always be of the same size, if it is formed of the same liquid substance, and falls from a solid of the same substance, size, and shape, provided that the temperature remain the same, and the growth-time, or length of the time-interval between the successive drops, be constant.

The most prominent fact noticed by the author is that, on the whole, the drops undergo a continuous diminution in weight or size as the growth-time increases. To such an extent is this the case, that drops falling at the rate of 60 drops in twenty seconds were nearly twice as heavy as drops falling at the rate of 1 in every twelve seconds. This connection between rate and weight (or quantity), the author very properly remarks, should not be lost sight of by prescribers and dispensers of medicine. A pharmacist who administers 100 drops of a liquid drug, delivered at the rate of 3 drops per second, may give half as

much again as one who measures the same number at the rate of 1 drop in two seconds, and so on.

Mr. Guthrie summarizes his results in the following laws :—

Law 1.—The drop size depends upon the rate of dropping. Generally, the quicker the succession of the drops, the greater is the drop; the slower the rate, the more strictly is this the case. This law depends upon the difference, at different rates, of the thickness of the film from which the drop falls.

Law 2.—The drop-size depends upon the nature and quantity of the solid which the dropping liquid holds in solution. If the liquid stands in no chemical relation to the solid, in general the drop-size diminishes as the quantity of solid contained in the liquid increases. The cause of this seems to be that the stubborn cohesion of the liquid is diminished by the solid in solution. When one or more combinations between the liquid and solid are possible, the drop-size depends upon indeterminate data.

For example, certain variations in the drop-size of solutions of chloride of calcium of different strengths point to the existence of definite hydrates; while the regularity of the variation of drop-size in the case of nitrate of potash points to the absence of hydrates.

Law 3.—The drop-size depends upon the chemical nature of the dropping liquid, and little or nothing upon its density. Of all liquids examined, water has the greatest, and acetic acid the least drop-size.

It is remarkable that butyric acid, which has sensibly the same specific gravity as water, gives rise to a drop less than half the size of the water drop.

Law 4.—The drop-size depends upon the geometric relation between the solid and the liquid. If the solid be spherical, the largest drops fall from the largest spheres. Absolute difference in radii takes a greater effect upon drops formed from smaller, than upon those formed from larger spheres. Of circular horizontal planes, within certain limits, the size of the drop varies directly with the size of the plane.

The fact that the drop increases in size according as the radius of the sphere increases from which the drop falls, and that the difference from this cause may amount to half the largest drop-size, the author regards as important to dispensers of medicine. The lip of a bottle from which a drop falls is usually annuloid. The amount of solid in contact with the dropping liquid is determined by the size of two diameters, one measuring the width of the rim of the neck, the other the thickness of that rim. In most cases the curvature and massing of the solid at the point whence the liquid drops is so irregular as not to admit of any mathematical expression.

Law 5.—The drop-size depends upon the chemical nature of the solid from which the drop falls, and little or nothing upon its density. Of all the solids examined, antimony delivers the smallest and tin the largest drops.

Law 6.—The drop-size depends upon temperature: generally the higher the temperature, the smaller the drop. With water the effect of a change of temperature of 20° to 30° C., is very small.

Law 7.—The nature or tension of the gaseous medium has little or no effect upon drop-size. (Chem. News, 1864, p. 270.)

On the Pharmaceutical Applications of Glycerine. (Benger.)

Mr. F. Baden Benger read a communication on this subject before the Pharmaceutical Conference.

In this paper a short history was given, and a *résumé* of its applications in pharmacy. The preparations known as "plasma," in which glycerine with starch is substituted for lard, as a basis of ointments, had been made the special subject of experiment by the author. He had found *tous-les-mois* starch superior to any other in making the simple plasma. Fifty grains of *tous-les-mois* were to be rubbed with one ounce of glycerine, and the mixture heated to 240° for a few minutes or till it became translucent. He thought that plasma might replace lard in ointments having a tendency to become rancid, but its relatively

great expense would preclude its general adoption. The glycerols, or solutions of different substances in glycerine, were then noticed. A good "tincture of myrrh and borax" could be made by dissolving one part of borax in two of glycerine, and adding tincture of myrrh. As substitutes for syrup, the glycerols did not appear to possess any superiority. Its use as an excipient in pill-making was strongly advocated. (Pharm. Journ. vol. vi. p. 209.)

Preservation of Lemonade. (Ladi.)

Ladi has suggested the employment of sulphite of magnesia as a means of preserving lemonade from the spontaneous change which it undergoes, and the early deposition of a granular salt, which takes place when it is prepared in a concentrated form. The sulphite of magnesia, by gradual oxidation, becomes converted into the sulphate, and thus appears to prevent alteration. A very small quantity of the salt is sufficient for the purpose. (Schweiz. Zeitsch. f. Ph. ; N. Jahrb. vol. xxi. p. 39.)

Aniline Varnish for Coating Bottles.

When an alcoholic solution of aniline is evaporated on a glass plate there remains a thin transparent coat of aniline, which by reflected light appears as a metallic green iridescence, but by transmitted light of a blue or violet colour, according to the shade of aniline used. Aniline being soluble in spirit varnishes, it is proposed to use such a blue transparent varnish for coating bottles intended to hold substances easily affected by light. (N. Jahrb. Pharm. vol. xx. p. 44.)

Preservation of Animal Matters in the Open Air. (Pagliari.)

M. Pagliari communicated to the French Academy a new and very simple mode of preserving animal matter. The liquid he employs for this purpose is composed of alum, benzoin, and water, and differs but little from the author's *hemostatic water*.

A single coat of this preserving liquid applied upon the substance when exposed to the open air, is sufficient to prevent its decay.

Pagliari's hæmostatic water is made by boiling for six hours 8 ounces of tincture of benzoin (containing about 2 ounces of the balsam), 1 pound of alum, and 10 pounds of water, in a glazed earthen vessel, stirring constantly, and supplying the loss with hot water. The liquor is then strained and bottled. (Comptes Rendus; Amer. Journ. Pharm. vol. xxxvi. p. 375.)

Microscopical Research in Relation to Pharmacy.

(Deane and Brady.)

A long and most valuable paper on this subject was contributed to the last meeting of the Pharmaceutical Conference by H. Deane, F.L.S., and H. B. Brady, F.L.S. The communication professed to be only a preliminary account of their researches, indicating the general method of operating, and not embodying the full results of the investigation. Nevertheless, the authors advanced so many striking suggestions, and adduced such a number of important facts, that we find it impossible to condense them into the limited space at our disposal. The paper, when read, was illustrated by a number of drawings, representing the different crystalline forms obtained; these have been promised for publication in the 'Pharmaceutical Journal,' but for some reason have not yet appeared.

The paper was especially devoted to the results of the examination of the various preparations of *Opium*. The process adopted in examining the constituents of a fluid preparation of this sort under the microscope is a very simple one.

Having, as a preliminary step, taken the specific gravity, and ascertained the percentage of carefully-dried extract in it, from 4 to 6 drachms are evaporated in a watch-glass to about the consistence of treacle. This residue is then poured upon a slip of glass, and covered with a piece of thin glass, and after standing a few days, it is sealed in with gold size. Crystallization sometimes commences before the preparation is removed from the

watch-glass, sometimes immediately after transferring to the glass slip, but in many cases not for several days. The time taken is dependent on one of two influences, the quality of the opium and the exact degree of inspissation. The authors give a careful description of the distinctive forms assumed by the various opium principles, and the physical characters their crystals present. These are illustrated by the drawings already referred to. To determine properly the value of a preparation from the appearance of the extractive under the microscope, it is of course necessary to be acquainted with these forms and characters; nevertheless, the authors state that even in the absence of very accurate knowledge, any one who will make a few experiments for the sake of practice, will soon be able, by observing the presence or absence of certain forms of crystals, easily seen in typical specimens, to pronounce with little hesitation on the quality or genuineness of samples of any of the ordinary preparations of opium.

The authors next give the results of their examination of a large number of specimens of opium, and of the various preparations from it which are in ordinary use. Of these, we can only refer to one, namely *Liquor Opii Sedativus*. Of this, they state:—"The striking appearance resulting from the evaporation of Battley's Sedative first drew our attention to the mode of investigation now described. We have examined it frequently, and always have met with the same characters. The slides present an almost opaque mass of crystals of morphine salts and codeine, with a very small proportion of narcotine (and meconic acid?), and, so far as we have observed, complete absence of resinous matter and narceine. Any one who has studied the microscopic characters of this preparation will readily understand how it has kept its place with the profession in spite of the cheap imitations which have been so largely puffed as substitutes of it. It is perhaps only justice to say, that the preparation which gives results most nearly like Battley's, is that made by Mr. Morson." Lastly, the authors thus sum up the general conclusions they arrive at:—

“That tincture, most nearly of any of the preparations represents the properties, good and bad, of the crude drug.

“That when crude opium is taken up with proof spirit, as in tincture, the resin separates on evaporation.

“That the preparations which have held their ground with the public and the medical profession, in spite of price, differ from the tincture in comparative freedom from resin and narcotine, and in containing only a diminished quantity of meconic acid.

“That in the preparation of extract of opium, it is important to use a large quantity of distilled water, to ensure the separation of narcotine and resin.

“That when extract of opium is dissolved in water, filtered, and evaporated again to an extract a second or third time, the crystals frequently differ considerably from those seen in the normal or first-formed extract.

“That when extract of opium is taken up with rectified spirit 56 o. p., and evaporated again to an extract, crystallization does not take place, or only to a very trifling extent.

“That morphine and its salts, and perhaps other opium principles, do not crystallize readily from their solution in wine.”
(Pharm. Journ. vol. vi. p. 232.)

PHARMACEUTICAL FORMULÆ.

Pills of Bontius. (Favrot.)

M. Favrot gives the following formula for these well-known pills :—

Aloes,	
Gamboge,	
Gum Ammoniacum,—āā	½ oz.
Alcohol	6 oz.

Digest the powdered gum in a water bath for twenty minutes with 3 oz. of the alcohol, and having poured it off, exhaust the residue left with the remainder of the spirit. Having allowed the tincture to cool, filter and evaporate to a soft mass ; then make into four-grain pills. (Canada Lancet.)

Castor Oil Pills. (Stanislaus Martin.)

M. Stanislaus Martin recommends the following as an easy mode of administering castor oil :—

Rub up together—	
Castor Oil	15 parts.
Pulv. Gum. Acaciæ	8 „
Water	15 „
Add gradually—	
Wheat Flour	15 „

Mix well together, divide into pills, which left exposed to air soon become dry. The purgative action may be increased by substituting magnesia for flour—equal quantity.

(Bull. de Thérap.)

Copaiba Capsules. (Quera.)

E. Quera, of New York, gives the following for copaiba capsules as made by him:—

Pure Balsam of Copaiba . . .	9 troy oz.
Ess. Oil of Cubebs . . .	1 „

To be divided into 480 capsules, each containing 9 grains of balsam and 1 grain of ess. oil of cubebs. (Amer. Journ. Pharm. vol. xxxvi. p. 9.)

Lemon Syrup. (Timbalgrave.)

The author offers the following as an improved recipe for Lemon Syrup:—

Take about twenty-five lemons, remove the exterior yellow oil-cells and their contents by grating, avoiding as far as possible the white part of the rind. The zestes of the lemons thus obtained are placed in a bottle with $8\frac{1}{2}$ pints of simple syrup and left in contact four days, with occasional agitation, when the whole is added to $31\frac{1}{2}$ pints of boiling simple syrup and strained. When cold, add 13 drachms of citric acid dissolved in an equal weight of water and mix them.

Lemonade prepared with this syrup can be kept during five or six months without alteration. (Journ. de Pharm. de Toulouse.)

Emulsion of Pumpkin Seed and Male-Fern.

Pumpkin Seed	617 grs.
Sugar	416 „
Oleo-resin of Male-Fern . .	61 to 122 „
Water	5 f. oz.

Bruise the seed in a marble mortar with a fourth part of the sugar, add about half a fluid ounce of water, and, when a homogeneous paste is obtained, add the oleo-resin, mix and dilute gradually with the remainder of the vehicle. This emulsion should not be strained, and when the preparation has been well made,—that is to say, when the seeds have been thoroughly bruised,—the patient can take the emulsion without difficulty.

Should be taken early in the morning, at four times, at intervals of a quarter of an hour, The phial should be shaken each time it is used. (Bull. Thérap.; Amer. Journ. Pharm. vol. xxxvi. p. 213.)

Compound Santonin Lozenges. (Fougera.)

Santonin	25 grammes.
Jalapin	10 „
Pulv. Gum Arabic	30 „
Chocolate, pure	60 „
White Sugar	160 „
Water, <i>q. s.</i> , about	15 „

Make a pilular mass, and divide into 1000 pills and coat with sugar. The jalapin may be replaced by resin of gamboge. These lozenges are well known in New York as “dragées de santonine composées.” (Amer. Journ. Pharm. vol. xxxvi. p. 100.)

Tasteless Castor Oil. (Stanislaus Martin.)

M. S. Martin states that the disagreeable taste of Castor Oil may be concealed by beating it well up with the contents of an egg, and adding a little salt or sugar, and a few drops of orange-flower water. (Amer. Journ. Pharm. vol. xxxvi. p. 105.)

Cod-liver Oil Jelly. (Dufourmantle.)

Cod-liver Oil	30 grammes.
Isinglass	2 „
Water, <i>q. s.</i> to dissolve the Isinglass.	

When the isinglass is dissolved, add the oil gradually, stirring constantly, aromatizing it at the same time with anise or other oil, four drops. A large tablespoonful of this Jelly is a dose. (Journ. de Pharm. Jan. 1864.)

Citrate of Iron and Strychnia.

This should contain one part of strychnia in a hundred of the combined salts:—

Citrate of Iron . . . { 2 troy ounces,
1 scruple.

Strychnia,

Citric Acid,—āā. . . . 10 grs.

Water 10 oz.

Dissolve the Strychnia with the aid of the citric acid in an ounce of the water, and the Iron in the remainder.

Mix the two solutions, evaporate it to the consistence of a syrup, and pour it on plates to dry in scales.

The addition of the strychnia does not change the appearance of the citrate of iron. Five grains contain a 20th of a grain of strychnia. Dose 3 to 6 grs. three times a day. (Canada Lancet.)

Citrate of Iron and Magnesia.

Hydrated oxide from $3\frac{1}{4}$ ounces of persulphate of iron is dissolved in 3 ounces of citric acid, and the solution is then completely saturated with carbonate of magnesia. The solution is afterwards filtered and evaporated to a proper consistence and scaled in the usual way. (N. Repert. f. Pharm. C. N. vol. i. pp. 178, 611.)

Genuine Cologne Water. (Farina.)

One of the Farinas of Cologne has published the following form for Cologne Water:—

Benzoin (purified) 2 ounces.
Ol. Lavandulæ 4 „
Ol. Rosmarini 2 „
Alcoholis fortioris 9 gallons.

To this solution are added successively:—

Ol. Neroli	} of each 10 ounces.
Ol. „ petits grains	
Ol. Limonis	
Ol. Aurantii Dulcis	} of each 20 „
Ol. Limettæ	
Ol. Bergamii	

Tinct. Flor. Geranii Rosei . . . q. s.

Macerate for some weeks, then fill into flasks.

(Zeitsch. des Nord. Apoth. Ver.)

Dentifrice Powder.

Cream of Tartar	100 parts.
Kaolin	100 „
Tannin	2 „
Sugar	50 „
Orris Powder	25 „
Essence of Peppermint	15 drops.

Triturate separately each of these substances; mix afterwards with care to form a homogeneous powder; and lastly aromatize with the essence of peppermint. (N. Jahrb. Pharm. vol. xx. p. 75.)

Granulated Effervescing Powders. (Bedall.)

Mix well-dried tartaric acid and bicarbonate of soda, in the proportion of 5 to 6, with sufficient strong alcohol to reduce the mixture to a moist condition; pass it then through a somewhat coarse sieve, and thoroughly dry it. If desired, it may be flavoured with a little oil of lemon dissolved in the alcohol. A mixture thus prepared effervesces on the addition of water to the last crumb. (N. Jahrb. Pharm. vol. xx. p. 75.)

Effervescing Bismuth Water. (Ogle.)

Dr. Ogle recommends the administration of Schacht's "liquor bismuthi" in ordinary aerated water, in the same manner as lithia is administered. Each bottle of aerated water holds in solution one drachm of the "liquor." The taste of the bismuth is perfectly neutralized by the solution in effervescing water. The solution is not decomposed by the fixed air, and remains perfectly limpid and bright for several months. Schacht's Liquor may be administered also in combination with magnesia, potash, and soda waters. (Brit. Med. Journ.)

Decoction or Infusion of Ricinus Communis. (Routh.)

Leaves of the Castor Oil Plant	A handful.
Spring Water	6 or 8 pints.
Boil well. Dose, from 1 to 2 drms. daily,	

Preparation of Black Drop. (Mayet.)

M. Mayet having examined the various formulæ in use for the preparation of Black Drop, proposes the following as best adapted to the requirements of modern practice:—

Opium 3½ oz.
 Nutmegs 5 drms.
 Saffron coarsely powdered . . . 2 drms.

Macerate for seven days in a closed vessel in—

Distilled Vinegar 15 oz.

Heat in a water-bath for half an hour, express strongly, and add to the residuum—

Vinegar 5 oz.

Strain, and add the fluid to the produce of the first operation. Filter, add—

Sugar 1½ oz.

And reduce by evaporation in a water-bath to seven ounces.

The liquor, after cooling, should weigh 318 by Beaume's areometer. Thus prepared, the Black Drop is equivalent to one half its weight of opium, or one quarter of the extract; one drop may be considered equal to two drops of Rousseau's and four of Sydenham's laudanum. (*Journ. de Méd. et Chir.*; *Dub. Med. Press.*)

Extemporaneous Emp. Lyttæ. (Morris.)

This merely consists in mixing with the palette-knife, on a slab, equal parts of the resin cerate and powdered cantharides; remembering that it must be spread thinly on the adhesive plaster, as it is more readily melted, and would run if too thickly put on. This is a very ready and effective substitute for the Pharmacopœia preparation. (*Brit. Med. Journ.*)

Pencils of Sulphate of Copper. (Calmberg.)

These may be readily formed by triturating briskly together—

Sulphate of Copper 4 parts.
 Borax 1 „

The water of crystallization given out unites the two into a

plastic mass, which may be moulded as desired. (Amer. Journ. Pharm. vol. xxxvi. p. 106.)

Glycerates and Glycerolates. (W. Abbotts Smith and Demarquay.)

Glycerate of Starch.

Glycerine	1 oz.
Starch	$\frac{1}{2}$ drm.

Glycerate of Soap.

Animal Soap	1 to 4 parts.
Glycerine	30 parts.

Scent with any essence.

The above two glycerates form the chief bases of the compound glycerates.

COMPOUND GLYCERATES.

1. Binocide of Mercury 1 part.
Glycerate of Starch 60 parts.
2. Iodide of Potassium 4 parts.
Glycerate of Starch 30 parts.

GLYCEROLATES.

Lotions and Liniments.

1. Extract of Hyoscyamus . . . 1 drm.
Glycerine 1 oz.
2. Tinct. Digitalis 1 drm.
Glycerine 1 oz.

Glycerolates of the extract or Tinct. Opii and Belladonna may be similarly prepared.

Ammonia	1 drm.
Glycerine	1 oz.

When volatile liniments are indicated.

Cyanide of Potassium	10 grs.
Glycerine	2 oz.

In neuralgia, by means of a compress.

Chloroform	1-1 $\frac{1}{2}$ drm.
Glycerine	1 oz.

Mix carefully in a mortar. In gout, lumbago, etc.

Sulphate of Strychnine	4 grs.
Glycerine	1 oz.

In paralysis of the extremities.

Tannin 1½ drms.

Glycerine 1 oz.

In vaginitis, by means of a plug of wadding.

Injections.

Tannin ½ drms.

Glycerine 1 oz.

In blenorragia.

Tinct. Iodine 20 to 30 drops.

Glycerine 1 oz.

In vaginitis.

Enemata.

Glycerine 1 oz.

Water 5 oz.

In dysentery.

Iodine 15 grs.

Iodine of Potassium 15 grs.

Glycerine 3 oz.

Water 5 oz.

In chronic dysentery.

Gargle.

Barley water 5 oz.

Glycerine 1 oz.

In diseases of the throat.

Plasters.

Gum Arabic 1 part.

Glycerine 4 parts.

Spread the compound upon linen or paper. Any of the substances, soluble in Glycerine, may be introduced into these plasters.

Glycerated Collodion.

Common Collodion 100 parts.

Glycerine 2 parts.

Glycerinated Mustard Poultice.

Glycerine 3 drms.

Starch 2½ drms.

Essence of Mustard 10 drops.

Spread upon a fold of linen, and apply.

Glycerolate of Creasote.

Creasote 5 to 10 drops.

Glycerine 3 oz.

Mix well together by aid of heat, and filter.

Glycerolate of Tar.

Tar 2½ drms.

Glycerine 1 oz.

Mix together when heated in a water-bath, and filter.

Glycerolate of Coal Tar.

Coal Tar 2½ drms.

Glycerine 3 oz.

Let them be well mixed together in a water-bath for an hour, and then be filtered.

Glycerolate of Chlorate of Potash.

Chlorate of Potash 2½ drms.

Glycerine 3 oz.

A part only of the chlorate of potash is dissolved, the remainder being held in suspension.

The above four Glycerolates are used in gangrenous wounds.

Linctus Glycerini. (Halliday.)

Mr. Halliday, of Manchester, has introduced glycerine as a medium for the administration of ipecacuanha, squill, etc., in the form of a linctus. The result is a palatable and elegant preparation.

Glycerolate of Roses.

Replace the honey in *Mel Rosæ* by glycerine, over which it possesses the important advantage of not fermenting, so that it may be kept for some time without undergoing change.

Infusum Sennæ Aromaticum. (Sprague.)

Sennæ Alexandr. Fol. Contus. . . 2 oz.

Coriandr. Sem. Contus. 6 drms.

Caryophyll. Contus. 2 drms.

Aquæ Destill. 30 f. oz.

Macerate in a closed vessel for four hours, then strain and add.

Magnes. Sulphatis Exsicc. . . . 3 oz.

Extract. Glycyrr. 1 oz.

Dissolve the Sulphate of Magnesia and Liquorice in twenty-four ounces of the infusion, pour off the clear liquid, and add

Tinct. Sennæ Comp.	4 or 6 oz.
Sodæ Bicarb.	$\frac{1}{2}$ oz.
Sp. Ammon. Arom.	$\frac{1}{2}$ oz.

Mix. Dose, 1 to 2 oz., to which should be added a table-spoonful of warm water.

Mr. J. H. Sprague remarks that the above is a preferable preparation to that of the B. P. The cloves have a greater preservative power than ginger, and he thinks, with Dr. Cullen, that coriander best covers the taste and odour of senna, and obviates its inducing constipation.

Mistura Cathartica. (Sprague.)

Infusi Sennæ Aromat. (Sprague)	9 f. oz.
Sodæ Sulphat.	1 oz.
Magnes. Sulphat. Exsicc. . . .	1 oz.

Dissolve and add—

Tinct. Sennæ Comp.,	
Tinct. Jalapæ,—ää	1½ oz.

Misce: fiat mistura, et per chartam cola. Dose, 1½ oz. to 2 oz.

This mixture is an excellent combination of purgatives, and generally produces copious evacuation.

Mistura Cathartica Ammoniata. (Sprague.)

Inf. Sennæ Aromat. (Sprague) .	8 oz.
Sodæ Sulphat.	1 oz.
Ammoniæ Carbonatis	1 drm.

Dissolve and add—

Tinct. Sennæ Comp.	1½ oz.
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Mistura Aperiens Communis. (Sprague.)

Inf. Sennæ Aromat. (Sprague)	36 f. oz.
Potassæ Tart.	4 oz.
Tinct. Sennæ Comp.	9 oz.
Syr. Sennæ	6 oz.

Dose, 1½ oz. to 2 oz.

This is a very useful and a pleasanter formula than black draught. It has also the advantage of keeping good for a longer time.

Mistura Aperiens Aloetica. (Sprague.)

Decoct. Aloes Comp.	8 f. oz.
Tinct. Aloes	1 oz.
Sp. Ammon. Aromat.	2 drms.

Mix.

Prescribed for the aged, to counteract flatulent distention.

Mistura Gentian. Comp. (Mackenzie.)

Inf. Gentian. Comp. P. L.	7 f. oz.
Inf. Sennæ Aromat. (Sprague's)	4 oz.
Potassæ Tart.	1 „
Tinct. Cardamom. Comp. P. L.	1 „

Mix.

An eighth to be taken at 11 A.M. and again at 4 P.M., and at bedtime. A substitute for Abernethy's mixture—the Mist. Gent. Comp. of the P. L.

Cod-Liver Oil Mixture. (Atherley.)

Yolk of one Egg.	
Pulv. Sugar	2 oz.
Orange Flower Water :	1 oz.
Ol. Morrh.	3 oz.
Ess. Bitter Almonds	1 drop.

The egg and sugar are well rubbed in a mortar, the essential oil is then dropped in, and orange flower water gradually added, and lastly the oil, little by little, and the whole thoroughly mixed. One or two drachms of brandy preserve it from change for weeks. (Med. Times.)

Pills of Iodide of Iron.

Iodide of Potassium	33 gr.
Sulphate of Iron	26 gr.
Honey and Pulv. Althææ	q. s.

For twenty pills of three grains, each containing one and a half grain iodide of iron. The decomposition of the two salts takes place in the stomach at the first contact of the liquids with the digestive organs.

Sol. Iodide of Iron.

Potass. Iodid.	8½ oz.
Ferri Sulph.	5 oz.
Aquæ destill.	1 lb.

Triturate the two salts, dissolve them in four-fifths of the water ; double decomposition takes place. When the water is at rest, sulphate of potash falls to the bottom. The last fifth of water is used to wash the sulphate. Keep the solution in a well-closed bottle, leaving a few nails in it. (Dub. Med. Press.)

Substitute for Dupasquier's Official Sol. of Ferri Iodidi.

Mucilage	9 oz.
Syr. Flor. Aurantii	2½ oz.
Iod. Potassii	32 gr.
Ferri Protosulph.	26 gr.

Triturate the two salts, and add a small quantity of the mucilage. Decomposition takes place immediately.

Gelatinized Chloroform. (Grimault.)

M. Grimault supplies a formula for the above.

Pure Chloroform	1 volume.
White of Eggs	2 „

Shake up in a phial. The jelly may be preserved several days without separation. (Bull. de Thérap.)

Unalterable Nitrate of Silver Pills.

It is well known that pills containing nitrate of silver are difficult to preserve, in consequence of their liability to decomposition. The Bull. de Thérap. proposes to mix the silver salt with some inorganic matter incapable of exercising any action

upon it, and using as an excipient mucilage of tragacanth. Nitrate of potash and pure silica are recommended for combination with the nitrate of silver.

1. Nitrate of Silver 3 gr.
- Pure Precipitated Silica 30 gr.
- Muc. Gum. Tragac. q. s.

Mix the nitrate of silver and silica with due care, and make twenty pills, which should be allowed to dry of themselves in the dark if they are too soft. Each pill contains 0.154 grain of nitrate of silver.

2. Nitrate of Silver 3 gr.
- Nitrate of Potash 30 gr.
- Mucilage Gum Tragacanth q. s.

Prepared like the preceding. (Bull. de Thérap.)

Syrup of Iron and Cinchona. (Grimault.)

M. Grimault proposes the following process for producing a perfectly limpid syrup having an agreeable taste:—

- | | |
|--|-------------|
| Pyrophosphate of Iron and Soda | 10 grammes. |
| Distilled water | 300 „ |
| Sugar | 700 „ |

The iron salt is dissolved in the water, and the sugar is added to it in a water bath. The liquid is then filtered, and ought to be perfectly transparent. Next, dissolve—

- | | |
|---|------------|
| Hydro-alcoholic Extract Red Cinchona Bark | 5 grammes. |
| in | |
| Alcohol | 100 „ |

Filter, and add the solution cold to the syrup as above described. The syrup contains in each teaspoonful about a grain and a half of extract cinchona, and three grains of pyrophosphate of iron and soda. (Bull. Génér. de Thérap. and Brit. Med. Journal.)

Bleaching Sponges. (Artus.)

M. Artus washes good sponges for some time in hot diluted

soda lye; then immerses them in a bath of weak hydrochloric acid, and 3 per cent. of hyposulphite of soda. The result is very satisfactory. (Moniteur Scientifique.)

Bleaching Gutta-Percha.

Dissolve 1 part of gutta-percha in 20 parts of hot benzole, shake the solution with one-tenth part of freshly calcined plaster, and set aside, with occasional agitation, for two days. The clear pale brownish-yellow liquid is then decanted into another vessel containing double its bulk of strong alcohol, when the gutta-percha will be precipitated in the form of a brilliant white tenacious mass, which is pounded together in a mortar, and rolled into cylindrical sticks. (Amer. Druggists' Circular.)

Dyeing Sponge Yellow. (Rutter.)

When well washed, Turkey sponge is immersed in a bath of nitro-hydrochloric acid three drms. and water five drms. for *half a minute*, then slightly pressed, and again immersed in dilute sulphuric acid P. L. for fifteen minutes, and then plunged into a bath of Liq. Ammon. Fort. two drms., water one ounce, and allowed to digest for five or ten minutes,—a beautiful orange-yellow colour will be produced, which is very permanent. The texture of the sponge is not at all injured by this process. It wears equally well as the ordinary sponge, and is much more saleable. (Chem. News, vol. ix. p. 123.)

Removal of Stains from Silk.

M. A. P. recommends the following for removing ink stains from *violet silk* without altering the colour:—Brush the portion of fabric with tincture of iodine, then, after a few seconds, well saturate the spot with a solution of hyposulphite of soda, and dry gradually.

THERAPEUTICAL NOTES AND FORMULÆ.

Phosphate of Lime in Periostitis. (Piorry.)

M. Piorry administers daily 2 drachms of Phosphate of Lime obtained by the precipitation by ammonia of a solution of the phosphate in hydrochloric acid, the deposit being carefully washed and preserved in a humid condition, in cases of swollen and softened condition of the bones. He found that in syphilitic cases the phosphate could be administered, in combination with mercury, without incompatibility. (Journ. de Chim. Méd.)

Sulphite of Soda in Diphtheria. (Lyell.)

Mr. Lyell uses the following form in Diphtheria :—

Sulphite of Soda	½ oz.
Water	4 oz.

½ drm. every four or six hours.

(Brit. Med. Journ.)

Arseniate of Soda in Chronic Congestion of the Lungs.

M. Bouchut exhibits Arseniate of Soda in the form of a syrup :—

Sodæ Arseniatis	1 gr.
Syr. Cinchonæ	10 oz.

Dose 1–5 teaspoonfuls daily.

The oxymel of squills and syrup of poppies may be used in conjunction where indicated. (Journ. de Méd. et Chir. Prat.)

Bromide of Ammonium in Whooping-Cough. (Harley.)

Dr. Harley uses this salt for preventing the occurrence of the whoop. He exhibits one grain for every year of the child's age. Where the child is strong the dose may be two grains. (Med. Times.)

Bromide of Potassium in inducing Sleep. (Behrend.)

Dr. Behrend has used successfully the bromide of potassium in the induction of sleep. He prescribes 25 grains in a little cold water three times a day.

Other authors speak highly of this salt as a powerful sedative. (Lancet.)

Bromide of Lithium. (Gibb.)

Dr. Gibb treats gout and rheumatism of the throat and neck with small doses of this salt.

He finds bromide of zinc relieve impaired nervous power.

He also proposes to use bromide of lead as a soothing and cooling local agent in certain stages of inflamed mucous membrane. (Brit. Med. Journ.)

Bichromate of Potash in Treatment of Nasal Polypi. (Frédéricq.)

Dr. Frédéricq uses a saturated aqueous solution of the above salt, and applies it with a brush to the parts of the polypus within reach, care being taken to avoid the neighbouring tissues. (Brit. Med. Journ.)

Ferri Potassio-Tart. in Chronic Pulmonary Consumption. (Spender.)

Ferri Potassio-Tart.	. . .	5 grs.
Sp. Ammonia Arom.	. . .	15 minims.
Sp. Ætheris Chlor.	. . .	10 minims.
Aqua	1 oz.

M., ft. haustus.

(Med. Times.)

Persulphate of Iron in Hæmorrhoids. (Cartwright.)

Dr. G. S. Cartwright uses the following form, having found it preferable to ointment of galls, opium, etc. :—

Persulphate of Iron $\frac{1}{2}$ drm.

Simple Cerate 1 oz.

First applying lead-water freely to the part. The ointment is sometimes employed with double the quantity of persulphate. (Amer. Journ. Med. Science.)

Perchloride of Iron and Collodion as a Hæmostatic.

Crystallized Perchloride of Iron 1 part.

Dissolve in—

Collodion 6 parts.

This must be done gradually, or the heat produced will cause the ebullition of the collodion. The mixture is a yellowish-red limpid fluid, which, when applied to the skin, gives rise to a small pellicle of great elasticity. Very useful in the case of cuts, leech-bites, etc. (*Revue Méd. and Med. Times.*)

Tinct. Iodine in Boils. (Hoffman.)

Dr. Hoffman, of San Francisco, applies Tinct. Iodine of double the strength given in the U. S. Pharmacopœia to boils, carbuncles, and bunions, and finds that it cuts short the suppurative stages more than one-half, and relieves the patient of all pain. The soothing action of this remedy appears to be on the principle of absorption, *i.e.* the exosmose theory of Dutrochet. (*Dub. Med. Press.*)

Iodine as a Deodorizer and Disinfectant. (Richardson.)

Dr. Richardson recommends iodine to be placed in a common chip-box, the lid of the box being replaced by a covering of "lead," or it may be placed in the ornamental vases on the mantelshelf of a room. The smell of the iodine would thus be communicated to the air of an apartment, and the air would be fresh and agreeable to the sense of smell, and any organic matters present would be destroyed. (*Med. Times and Gazette*, Sept. 26, 1863.)

Absorption of Iodide of Potassium. (Deschamps.)

M. Deschamps has written a memoir showing that an ointment is a very good form for introducing iodide of potassium into the system. He found that more was absorbed by this means than when a bath with a much larger quantity of iodide was employed. (Brit. Med. Journal, Feb. 27, 1864.)

Black Oxide of Manganese in Diseases of the Stomach.

(Leared.)

After submitting several remedies to trial, for the purpose of finding one which would have an advantage over bismuth in not causing constipation, Dr. Leared has found in purified black oxide of manganese a most efficient remedy. Dose 10 grains three times a day before meals. May be used in affections of the stomach, where nitrate or carbonate of bismuth is indicated. (Med. Circ., Jan. 6, 1864.)

Black Oxide of Manganese. (Rogers.)

Dr. Goddard Rogers has confirmed Dr. Leared's remarks on the use of this salt in stomach diseases. He does not exhibit it in the form of a powder, but as a draught; the compound tragacanth powder being used to suspend the manganese. Dr. Neligan has also recommended the *sulphate* of manganese in dyspeptic affections. (Lancet; Dub. Med. Press, March 23, 1864.)

Nitrate of Silver in Dysentery. (Caradec.)

M. Caradec uses nitrate of silver in the form of an enema, night and morning, preceded by a copious enema of marsh-mallows or linseed. The quantity of nitrate of silver varies from $\frac{3}{4}$ to $\frac{1}{2}$ grain for children, to 4 or 5 grains for adults, in about 4 ounces of water. A few drops of laudanum are added to each enema. M. Caradec has also used this salt internally in doses not exceeding $\frac{1}{4}$ of a grain three times a day. (Bull. Gén. de Thé., March, 1864.)

Arsenicated Mineral Waters. (Robinson.)

Dr. George Robinson suggests that in the place of artificial solutions of arsenical compounds, it would be preferable to use natural arsenicated mineral waters, such as occur at Whitbeck, in Cumberland, in diseases where the use of arsenic is indicated. He asserts that the waters may be used safely and effectually. (Lancet, Aug. 1, 1863.)

Arsenious Acid in Leprosy. (Colles.)

Mr. Colles uses the following form in cases of leprosy, very prevalent among the natives of Bengal upon whom he operated :—

Arsenious Acid 4-10 grs.

Simple Cerate 1 oz.

Make an ointment.

(Dublin Med. Press.)

Sulphur in Tendinous Rheumatism. (Renard.)

Dr. Renard publishes an account of the case of a cure of rheumatic pains of the tendons by the application of sulphur dusted over the inside of the stocking. He used the ordinary commercial flowers of brimstone, which contain sulphurous acid. The stockings should be slept in, and the sulphur applied till the pain abates. (Brit. Med. Journ., Jan. 30, 1864.)

Quinine as a Local Antiseptic. (Giesler.)

Dr. Giesler has adopted the use of Quinine as an antiseptic. He has applied the sulphate in cases of gangrenous disease, bed-sores, and diphtheric sore-throats, etc., and met with great success. (Brit. Med. Journ., Jan. 23, 1864.)

Topical Injections of Strychnine in Paralysis of the Facial Nerves. (Courty.)

M. Courty, of Montpellier, has controlled severe neuralgic pains and paralysis of the facial nerve by injections of strychnine of the strength of 1 in 100 to 1 in 70. Injection, 8 to 16 drops along the course of the facial nerve, repeated every second or third day. (Dub. Med. Press.)

Morphia in Anæsthesia.

The Versailles Medical Society, in a series of researches on the subcutaneous injection of morphia during anæsthesia, has come to the following conclusions:—1. That salts of morphia, in doses of from 5 to 10 centigrammes, injected alone, produce a kind of intoxication, which may go on to torpor, but do not give rise to insensibility, properly so called. The effect is not durable, and in a few minutes the animal returns to its normal conditions. 2. Salts of morphia during anæsthesia produced by chloroform possess the singular property of prolonging the duration of the anæsthesia in proportion to the amount of morphia employed. 3. That this property may be turned to use without danger in man, when the duration of an operation gives rise to fears of continuing the anæsthesia by means of chloroform. (Med. Times.)

Santonine Worm Powders. (Fleming.)

Dr. Fleming recommends the following in cases of lumbrici:—

Santonine	2-6 grs.
Sugar of Milk	5 „

The patient having fasted since midday takes this powder at bedtime, suspended in a tablespoonful of cream; next morning a dose of castor oil. (Brit. Med. Journ.)

Sulphuric Acid in Itch. (Kalb.)

Dr. Kalb recommends as the most economic and infallible method of curing itch, a bath, to which is added two kilogrammes of sulphuric acid. The patient, on entering the bath, soon feels an itching, which causes him to scratch himself, and in this way the scabs, etc. are removed, and the acid allowed to operate on the acarus, its larvæ, and its eggs. (Brit. Med. Journ. i. 670.)

Internal Doses of Chloroform.

A fluid drachm of Chloroform is equal in soporific effect to 21 minims of laudanum. It may be given in doses of from 50

to 75 drops (4 to a minim) every half-hour for several hours together. 80 to 100 drops are prescribed in colic and delirium tremens. (Canada Lancet.)

Sulphuric Ether in Cases of Malingering.

Sulphuric Ether is a most valuable remedy in detecting various diseases simulated by soldiers. Its slow and insidious action enables the surgeon to easily detect feigned deformity or sickness. While yielding to the powerful influence of the remedy, the malingerer finds it impossible to exercise sufficient control over his will to carry on the deception. Sulphuric ether has an advantage over chloroform in such cases, the action of which is too sudden and dangerous to be employed with impunity. (Amer. Med. Times; Dub. Med. Press, Mar. 30, 1864.)

Alcohol in Asthma. (Hyde Salter.)

Dr. Hyde Salter recommends doses of *hot* brandy, whisky, or gin, in a concentrated form, in asthmatic paroxysms. The alcohol must not be sipped but taken at a draught, as in the case of ordinary medicine. Its continued use requires that the dose should be constantly increased, in order to produce the same effect. (Lancet.)

Creasote in Skin Diseases. (Masse.)

M. Masse informs the French Academy that a mixture of—

Creasote,

Alcohol,

Water,—of each 50 grammes,

will cure all skin diseases produced by parasites. (Brit. Med. Journ.)

Benzine in Trichinosis. (Mosler.)

Professor Mosler, of Giessen, has destroyed trichinæ in the intestines by the administration of benzine. It destroys the embryos and prevents the spread of the disease. It should be administered in cautious doses. Mosler states that it is of all remedies the best anthelmintic. (Brit. Med. Journ.)

Gaseous Products given off during the Purification of Coal Gas, in Whooping-Cough. (Diday.)

M. Diday relates that in Lyons and other towns children affected with whooping-cough were made to walk up and down for two hours and a half near the purifying vessels of the gas-works, and were rapidly relieved. To which of the gases given off this result is to be attributed is uncertain.

The French Academy appointed a commission on this mode of treating whooping-cough. The commission approved of the remedy. (Brit. Med. Journ.)

Tar in Herpes Circinatus. (Bouchut.)

Starch 1 part.

Glycerine 15 „

Mix, and add—

Tar 16 „

Paint patches morning and evening.

Another :—

Glycerine,

Coal Tar Equal parts.

(Med. Times.)

Glycerine as an Excipient for Bismuth. (Follin.)

M. Follin employs the following mixture in certain diseases of the eye, applying it to the surface with a pencil.

Subnitrate of Bismuth . . . 1-3 parts.

Glycerine 3 parts.

(Brit. Med. Journ.)

Glycerine in Burns, Excoriations of the Skin, etc. (Startin.)

Tragacanth 2 to 4 drms.

Lime Water 4 oz.

Glycerine 1 oz.

Distilled Rose Water . . . 3 oz.

Make into a soft jelly, and use in the form of an ointment or embrocation.

Oil of Bergamot in Scabies. (Manfre.)

Dr. Manfre, of Naples, has found oil of bergamot a specific in the treatment of itch. He applies a plentiful and thorough friction, with an ounce or two of oil, and finds it always produce a perfect and instantaneous cure. (Boston Med. and Surg. Journ.)

Form for the Administration of Oil of Male-Fern in Tape Worm. (Fleming.)

Oil of Male-Fern 1 drm.

Mucilage $\frac{1}{2}$ oz.

Mix and add well—

Sweet Milk $1\frac{1}{2}$ oz.

The draught to be taken at bed-time, after omitting the dinner and evening meal of the same day. Next morning, a dose of castor oil. (Brit. Med. Journ.)

Ergot of Rye in Whooping-Cough. (Griepenkerl.)

Dr. Griepenkerl having observed that a child afflicted with whooping-cough lost it upon being attacked by the convulsive symptoms of ergotism, was led to administer the ergot of rye to five children suffering from whooping-cough, all of whom were cured in eight days. From his frequent employment of the ergot in an epidemic of whooping, he believes the following to be the best formula for a stable compound, divested of the irritating properties possessed by powdered ergot:—

Ergot in coarse powder . . . 20–30 grs.

Boil half an hour in water with—

Isinglass 1 oz.

To this add—

White Sugar $1\frac{1}{2}$ oz.

Dose, a teaspoonful every two hours for a child from five to seven years old. For younger children reduce the ergot to 10 or 15 grains for the same quantity of syrup. During the treatment avoid the use of articles of food containing tannin. (Edinb. Med. Journ.)

Syrupus Rhamni in Constipation. (Handfield Jones.)

Dr. Handfield Jones has recently used this once well-known remedy, and states that it possesses none of the faults, in any marked degree, attributed to it by Neligan, viz. causing thirst and distressing nausea. He substitutes—

Syr. Rhamni 2 drms.

Sodæ Potass. Tart. 1 drm.

for the ordinary black draught, and thinks the combination quite as good, with the advantage of not being so unpleasant. (Med. Times.)

Ammoniacum in Delirium Tremens, etc. (Piorry.)

M. Piorry uses a dose of ammoniacum as a test for delirium tremens; if the symptoms resist the use of this drug they do not originate in drink, but if they do, the ammoniacum acts with remarkable effect in rapidly dissipating the disturbance.

He administers as follows, continuing the use of it till the symptoms abate:—

Liquid Ammoniacum . . . 12–25 drops.

Simple Syrup 1 oz.

Distilled Water 4 oz.

(Journ. de Chim. Méd.)

Tinct. Aloes for application to Wounds.

Soc. Aloes 1 part.

Alcohol 2 „

Dip a pencil of lint into the tincture, and pass it over the surface of the wounds, or saturate with it the lint used for dressing. (Bull. de Thérap.)

Scutellaria lateriflora in Chorea. (Dutcher.)

Dr. Dutcher, of Pennsylvania, has used an infusion of this plant in chorea with great success.

Scutellaria lateriflora 1 oz.

Aqua 12 oz.

Given three times a day in four-ounce doses, about two hours after each meal. (Philadelphia Med. Reporter.)

Medicinal Properties of *Achillea Millefolium*. Yarrow, Millefol. (Waring.)

Mr. E. J. Waring, F.L.S., recommends a trial of this plant in the following cases:—

1. As an emmenagogue. In suppression of the lochia it was formerly employed with alleged success by Maumery, and this practise has recently been revived by Dr. Rouzier-Joly.

2. In hæmorrhoidal affections it has long enjoyed considerable repute, both as a local application and as an internal remedy.

3. In some atonic affections of the bladder, attended with discharges, it is well thought of by some American practitioners.

4. In intermittent fevers it has the recommendation of Fenein.

As a remedial agent it may be given in the form of extract, in doses of 5 to 30 grs., or tincture (one part of the herb to six parts of alcohol), in doses of $\frac{1}{2}$ a drm. to a drachm.

Achillea Millefolium has been introduced into the secondary list of the Materia Medica of the new United States Pharmacopœia. (Pharm. Journ. vol. v. p. 504.)

***Iberis amara* as a Purgative. (Wilks.)**

Dr. Wilks uses the Candytuft-seed alone or combined with jalap powder as a purgative. The seeds, when bruised, are oily and acrid, and when made into a pill of four or five grains act as a good purge. The action of this remedy was well tested in several cases of obstinate constipation. (Med. Times.)

***Veratrum viride*. (Watson.)**

Dr. James Watson, in his 'Observations on some New Remedies made in the Edinburgh Royal Infirmary,' recommends the form adopted by Dr. Cutter for Tinct. Verat. Viride, viz. four ounces of the dried root to a pint of diluted alcohol, sp. gr. 0·835. Dose 5 to 8 drops. Dr. Watson denies that *Veratrum viride* possesses any sedative properties. Its influence on the circulation results from its painfully depressing influence over the vital powers. (Edin. Med. Journ.)

The Diuretic Properties of the Seeds of the Clematis.

(Sauveur.)

The seeds of Traveller's-joy are largely used in Holland, and to some extent in Belgium, as a diuretic. Professor Sauveur, of Liège, has used an infusion of these seeds very successfully in all forms of dropsy. (Medical Mirror.)

On the Therapeutical Properties of Sanguinarina and its Acetate and Sulphate. (Thomas.)

Dr. Thomas, has made experiments on the therapeutical action of Sanguinarina (from *Sanguinaria Canadensis*), and arrived at the following results :—That Sanguinarina and its salts, when given in doses ranging from $\frac{1}{12}$ to $\frac{1}{8}$ of a grain, act as an expectorant, promoting the discharge of mucus from the lungs without disordering the stomach to any considerable extent.

When given in quantities of $\frac{1}{4}$ to $\frac{1}{2}$ of a grain, at intervals of two or three hours, nausea and vomiting are produced.

If the eighth or sixth of a grain be given every three hours for two or more days, the pulse will generally be reduced from five to fifteen beats in a minute, thus showing a decided sedative impression on the heart, which is, however, slowly developed, and ceases soon after the medicine is diminished. Dr. Thomas did not find that Sanguinarina or its salts produced the effects upon the liver usually ascribed to blood-root. He considers the pure alkaloid to be the most valuable principle residing in the root, although he believes it not to be the sole agent, as trials made with the impure resin resulted in therapeutic effects similar to those given above.

The author gives the following forms as good ones for their several purposes :—

Sanguinarinæ Sulphatis . . . 1 gr.

Aquæ 1 f. drm.

Dissolve and add :

Syrup 15 f. drms.

M. Dose, a teaspoonful. As an expectorant.

Syrup of Sanguinaria.

Contused Blood-root	2 oz.
Dilute Acetic Acid	1 pint.
Sugar	2 lb.

Moisten the root with a portion of the acid, place in a percolator, add the remainder of the acid, exhaust by percolation, and to the clear liquor add the sugar, and dissolve by a gentle heat.

The strength of this preparation is one ounce to a pint of syrup. Dose, a teaspoonful. Generally administered in combination with syrup of tolu, in diseases of the throat and lungs. (Amer. Journ. Pharm. vol. xxxvi. p. 140.)

Snuffs in Ozæna. (Trousseau.)

M. Trousseau uses the following powders as snuffs in ozæna, depending upon the condition of the nasal fossæ:—

1. Subnitrate of Bismuth,
Venetian Talc,—aa $\frac{1}{2}$ oz.
2. Chlorate of Potash 30 grs.
Powdered Sugar $\frac{1}{2}$ oz.
3. White Precipitate 5 grs.
Powdered Sugar $\frac{1}{2}$ oz.
4. Red Precipitate 5 grs.
Powdered Sugar $\frac{1}{2}$ oz.

The fossæ to be first cleared out with tepid water. A pinch of the snuff to be inspired vigorously by each nostril,—repeated twice or thrice a day.

In children, M. Trousseau uses the following injections:—

1. Chlorate of Potash 60 grs.
Distilled Water 7 oz.
2. Nitrate of Silver 1 gr.
Distilled Water 3 $\frac{1}{2}$ oz.
3. Sulphate of Copper or Sulphate
of Zinc 1 gr.
Distilled Water 3 $\frac{1}{2}$ oz.

(Brit. Med. Journ.)

New Diuretic Wine. (Trousseau.)

White Wine	750 parts.
Juniper Berries	50 "
Digitalis Leaves	10 "
Squill	5 "

Macerate during four days; add acetate of potash 15 parts. Filter.

Dose, two or three tablespoonfuls per diem. (Bull. Gén. de Thérap.)

Anti-asthmatic Paper.

Leaves, <i>Belladonna</i>	5 parts.
" <i>Datura Stramonium</i>	5 "
" <i>Digitalis</i>	5 "
" Sage	5 "
Tinct. Benzoin	40 "
Nitrate of Potash	75 "
Water	1000 "

Make a decoction of the plants; dissolve the nitrate of potash in the liquid, add the tincture of benzoin, and plunge into the liquid, leaf by leaf, a quire of red blotting-paper. After twenty-four hours, withdraw the paper, let it dry, and divide into squares 10 centimetres long by seven broad, and enclose them in boxes. Burnt so as to charge the atmosphere breathed by an asthmatic patient with the products of combustion and volatilization. (Journ. de Pharm. et de Chim.)

Lotion in Alopecia, or Falling of the Hair. (Frodsham.)

Dr. Frodsham recommends the following lotion:—

Spirit Ammon. Aromat.,	
Tinct. Cantharides,	
Glycerin,—āā	ʒjs.
Aq. Rosæ	ʒvj.

Mix.

(Dub. Med. Press.)

New Hæmostatic. (Riaza.)

Pure Chloride of Sodium . . .	15 grammes.
Neutral Sol. Perchloride of Iron	25 "
Distilled Water	60 "

Dissolve the chloride of sodium in the water, filter the solution and add the perchloride of iron. The alkaline chlorides render the clots formed by perchloride of iron more homogeneous. (Amer. Journ. Med. Sc. Jan. 1864.)

Soothing or Cooling Powders.

Pulv. Nitrate of Potash	10 grs.
Tartarized Antimony	$\frac{1}{2}$ gr.
Calomel	$\frac{1}{2}$ gr.
White Sugar	10 grs.

Mix, and divide into 4 powders.

Dose for children of four years of age, one powder; two years, half a powder; one year, a third of a powder. In the case of adults, four powders to a dose. The feet should be previously bathed in warm water, and perspiration encouraged. (Canada Lancet.)

Mouth Washes. (Dr. Barker.)

Tannin	6 grs.
Water	1 oz.

Mix.

Another, in Sponginess of Gums.

Tannin	$\frac{1}{2}$ oz.
Tinct. Tolu,	
Tinct. Myrrh,—of each	2 f. drms.
Spirit of Horseradish	2 f. oz.

Mix.

Another, in Inflammation of the Gums.

Chlorate of Potash	2 drms.
Tincture Catechu	2 f. drms.
Eau de Cologne	1 f. oz.
Water	6 f. oz.

Mix.

(Dental Times.)

After Extraction of Teeth. (Dr. Koecker.)

Tinct. Catechu,	
Honey,—of each	1 f. oz.

(Dental Times.)

Mouth Wash. (Dr. Ziegler.)

Liq. Sodæ Chlor.	$\frac{1}{2}$ f. oz.
Tinctura Gallæ	$1\frac{1}{2}$ f. oz.
Ammon. Muriat.	2 drms.
Mel Opt.	$\frac{1}{2}$ f. oz.
Aqua Rosa	$3\frac{1}{2}$ f. oz.

Mix.

In relaxed and depraved condition of gums accompanied with ulceration. (Dental News, Letter.)

Tooth Wash after Extraction of Stumps. (Parker.)

Tinct. Myrrh	4 drms.
Comp. Inf. Roses	4 oz.
Dilute Nitric Acid	20 minims.

Use three times a day.

(Brit. Med. Journ.)

Powder in Eczema. (M'Call Anderson.)

Camphor	30 grs.
Alcohol	q. s.
Oxide of Zinc,	
Starch,—āā	3 drms.

Make a paste of the Camphor by means of a few drops of the alcohol, then make a mixture with the other ingredients by triturating them well together in a mortar.

A little to be sprinkled over the parts or upon the poultice occasionally, when required to relieve the pain.

Cooling Ointment in Eczema. (M'Call Anderson.)

Camphor	2 scruples.
Oxide of Zinc	$\frac{1}{2}$ oz.
Glycerine	2 oz.
Carmines	2 grs.
Otto of Roses	3 drops.

Triturate the camphor into a thick paste.

BRITISH PHARMACOPŒIA.

The space at our disposal precludes the possibility of entering into any detailed examination of the British Pharmacopœia. Exhaustive and valuable lectures on the work, by the Professors of the Pharmaceutical Society, have been published in the *Pharmaceutical Journal*. The medical journals, the 'Chemical News' and the 'Chemist and Druggist,' have devoted series of articles to the subject. Several works specially devoted to the explanation of the Pharmacopœia, have also appeared; of these we give a list. In accordance with the suggestions of several of our Pharmaceutical friends, however, we give a tabular statement of the omissions and additions of substances and preparations in the British Pharmacopœia, as compared with the previous London Pharmacopœia. To the list of additions we append the doses and strengths of the preparations.

Substances and Preparations which were contained in the London Pharmacopœia, but are omitted from the British Pharmacopœia.

Absinthium.	Avena.
Acetum destillatum.	Calamina præp.
Aloe hepatica.	Canella.
Althæa.	Carota.
Amygdala amara.	Cerata (all omitted or transferred to Unguenta).
Ammoniae Citratis Liqueur.	Chimaphila.
———— Carb. Liq.	Confectio Aurantii.
Anisum.	———— Cassiæ.
Arsenici Chlor. Liq.	———— Opii.
Aqua Pulegii.	———— Rutæ.
Atropiæ Sulphas.	

- Cornu ustum.
 Cupri Ammon. Sulph.
 ————— Liq.
 Cydonium.
 Cyminum.
 Decoctum Chimaphilæ.
 ————— Cinchon. pall.
 ————— rub.
 ————— Cydonii.
 ————— Dulcamaræ.
 ————— Gallæ.
 ————— Granati.
 ————— Hord. comp.
 ————— Scopar. co.
 ————— Senegæ.
 ————— Tormentil.
 ————— Ulmi.
 ————— Uva Ursi.
 Emplastra Ammoniaci.
 ————— Cumini.
 ————— Potass. Iodid.
 Enemata Colocynth.
 Extractum Cinchon.
 ————— pall.
 ————— rub.
 ————— Colocynth.
 ————— Lactucæ.
 ————— Papav.
 ————— Pereiræ.
 ————— Uva Ursi.
 ————— Cinch. Liq. (The Inf.
 Cinch. Sp. of the P. L.)
 Ferri Ammon. Chlor.
 Granatum (rind of fruit).
 Helleborus.
 Hydrarg. Bichlor. Liquor.
 ————— Bisulph.
 Infusum Armorac. co.
 ————— Aurant. co.
 ————— Cinch. pall.
 ————— spiss.
 ————— Rosæ co.
 Inula.
 Juniperus (Fruit).
 Lactuca sativa.
 Laurus.
 Linimentum Æruginis.
 ————— Ammon. Ses. Carb.
 Maranta.
 Mentha Piperita.
 ————— viridis.
 Mel Rosæ.
 Mistura Gent. Co.
 ————— Sp. Vini Gal.
 Morphicæ Acetas.
 Mucuna.
 Oleum Æthereum.
 ————— Fœniculi.
 Ovi Vitellus.
 Oxymel Scillæ.
 Petroleum.
 Pilula Aloes co.
 ————— c. Sap.
 ————— Conii co.
 ————— Ipec. c. Scil.
 ————— Styrac. co.
 Piper longum.
 Pix.
 Plumbi Iodidum.
 Potassa c. Calce.
 ————— Carb. Liq.
 Pulegium.
 ————— Oleum.
 Pulvis Aloes co.
 ————— Cinnam. co.
 ————— Cretæ co.
 ————— Cretæ co. c. Opio.
 Pyrethrum.
 Rhamni Succus.
 Ruta.
 Sago.
 Sagapenum.
 Sodæ Sulphas.
 Spiritus Ammon. foetid.

Spiritus Anisi.

- Carui.
- Cinnam.
- Junip. co.
- Menth. virid.
- Piment.
- Pulegii.
- Vin. Gal.

Staphysagria.**Sulphuris Iod.****Syrupus Althææ.**

- Cocci.
- Croci.
- Rhamni.
- Sarsæ.
- Violæ.

Terebinth. Chiæ.

- vulgaris.

Tinctura Aloes co.

- Ammon. co.
- Cinch. pall.

Tinctura Colch. co.

- Conii.
- Cubeb.
- Ergot. Æth.
- Fer. Ammon. Chlor.
- Hellebori.

Tormentilla.**Unguentum Conii.**

- Hyd. Nit. mit.
- Opii.
- Picis.
- Liq.
- Plumb. Carb.
- Iodid.
- Sambuci.
- Sulph. co.
- Iodid.

Veratrum.**Vinum Veratri.****Viola.**

Substances and Preparations contained in the British Pharmacopœia, which were not in the London Pharmacopœia, with the Doses and Strengths of the more important Preparations.

Acidum Acet. Glaciale.

- Nit. Hyd. Dil. 10 to 30 min.

- Sulphurosum.

Aconitia.**Aconitum.****Ammon. Benz. 10 to 20 grs.**

- Phosph. 10 to 20 grs.

Antim. Oxid. 3 to 10 grs.

- Terechlor. Liq.

Aqua Fœnic. 1 to 2 oz.

- Laurocer. 10 to 30 min.

Arnica.**Atropiæ Liq.**

(1 dr. contains $\frac{1}{4}$ gr. of Atropia.)

Beberis Sulph. 2 to 10 grs.**Bela.****Belladonnæ Rad.****Calc. Carb. Præcip. 10 to 100 grs.**

- Hydras.

- Phosp. Præcip. 10 to 40 grs.

- Sacch. Liq. 15 to 60 min.

Cannabis Indica.**Chirata.****Chlori Liq. $\frac{1}{2}$ to 2 drs.****Chloroformi Sp. 10 to 60 min.****Cocculus.****Collodium.****Confect. Sulphur. Liq. 2 to 4 drs.**

- Terebinth. 1 to 4 drs.

Conii Fructus.**Cusso, $\frac{1}{4}$ to $\frac{1}{2}$ oz.****Decoct. Scopar. 2 to 4 oz.****Digitatinum, $\frac{3}{16}$ to $\frac{1}{16}$ gr.****Emplastrum Calefaciens.****Enem. Magnes. Sulph.**

Ext. Anthemid. 1 to 5 grs.
 — Beæ Liq. 1 to 2 drs.
 — Calumbæ, 2 to 6 grs.
 — Cannab. Ind. $\frac{1}{4}$ to 1 gr.
 — Colocynth. Co. 2 to 5 grs.
 — Ergotæ Liq. 15 to 30 min.
 — Filicis Liq. 30 to 60 min.
 — Krameria, 5 to 20 grs.
 — Opii Liq. 12 to 20 min.

(22 min. contain 1 gr. Ext. Opii.)

— Pareiræ Liq. 1 to 2 drs.
 — Quassia, 3 to 5 grs.
 Fel Bov. purif. 2 to 5 grs.
 Ferri Arsenias, $\frac{1}{8}$ to 1 gr.
 — et Quinæ Cit. 5 to 20 grs.
 — Oxid. Magnet. 5 to 20 grs.
 — Perchlor. Liq. 3 to 10 min.
 — Pernit. Liq. 30 to 60 min.
 — Peroxid. Hyd. 2 to 4 drs.
 — Phosphas, 5 to 10 grs.
 — Sulph. gran. 3 to 5 grs.

Ferrum redactum, 1 to 5 grs.

Fousel Oil.

Glycerinum.

Hemidesmus.

Hyd. Iod. Rub. $\frac{1}{4}$ to 1 gr.

— Nit. Acid. Liq.

Infus. Aurantii,

— Chiratzæ,	} 1 to 2 oz.
— Cusso,	
— Dulcamaræ,	
— Ergotæ,	
— Maticeæ,	
— Rosæ Acid.	
— Senegæ,	
— Uvæ-Ursi,	

Jalap. Resina, 2 to 6 grs.

Kamela, 60 to 120 grs.

Laurocerasus.

Lini farina.

Linim. Aconiti.

—— Belladonnæ.

Linim. Cantharidis.

—— Chloroformi.

—— Crotonis.

—— Iodi.

—— Terebinth. Acet.

Lithiæ Carb. 3 to 6 grs.

—— Citras, 5 to 10 grs.

Magnesia pond.

Magnes. Carb. pond.

Matico, $\frac{1}{4}$ to 2 drs.

Mist. Creasoti, 1 to 2 oz.

—— Scammon. $\frac{1}{4}$ to 2 oz.

Mucilago Tragacanthi.

Nectandra.

Ol. Myristicæ, 2 to 4 min.

—— Cubebæ, 5 to 20 min.

—— Coriandri, 1 to 4 min.

Pil. Aloes Barbæd. 4 to 8 grs.

—— et Assaf. 5 to 10 grs.

—— Socotr. 5 to 10 grs.

—— Assafoet. Co. 5 to 10 grs.

—— Colocynth et Hyosc. 5 to 10 grs.

—— Ferri Iodid. 3 to 8 grs.

—— Plumb. c. Opio, 4 grs.

(8 grs. contain 1 gr. of Opium.)

Plumbi Carbonas.

Podophylli Resina, $\frac{1}{4}$ to 2 grs.

Podophyllum Pelt. 10 to 20 grs.

Potass. Citras, 20 to 60 grs.

—— Permang. 3 to 4 grs.

—— Liq. $\frac{1}{4}$ to 1 oz.

Potass. Bromid. 5 to 15 grs.

Pulv. Amygd. Co. 60 to 120 grs.

—— Aromat. $\frac{1}{4}$ to 1 dr.

—— Catechu Co. 15 to 30 grs.

—— Cretæ Arom. 30 to 60 grs.

—— c. Opio. 10 to 40 grs.

(40 grs. contain 1 gr. Opium.)

—— Rhei Co. $\frac{1}{4}$ to 1 dr.

Pyroxylin.

- Sabadilla, 4 to 6 grs.
 Saccharum Lactis, 1 to 2 drs.
 Santonica, 60 to 120 grs.
 Santoninum, 4 to 6 grs.
 Scammonis Radix.
 ——— Resina, 4 to 8 grs.
 Sodæ Arsenias, $\frac{1}{10}$ to $\frac{1}{4}$ gr.
 ——— Liq. 3 to 5 min.
 (5 min. contain $\frac{1}{8}$ gr. of Arseniate.)
 Sp. Pyrox. rect. 10 to 40 min.
 — Cajeputi, 10 to 50 min.
 — Juniperi, 10 to 30 min.
 — Lavandulæ, 10 to 50 min.
 Strychnis Liq. 10 min.
 (2 drs. contain 1 gr. of Strychnia.)
 Succus Conii, 30 to 60 min.
 ——— Scoparii, $\frac{1}{2}$ to 1 dr.
 ——— Taraxaci, 2 to 4 drs.
 ——— Terebinth. Canad.
 Suppos. Acid. Tann.
 (Contains 2 grs. of Tannic Acid.)
 ——— Morphis, $\frac{1}{2}$ gr.
 Syr. Aurant. Flor. 1 to 2 drs.
 — Hemidesmi, 1 to 4 drs.
 — Scillæ, 1 to 2 drs.
 — Ferri Phosp. 1 to 4 drs.
 Tinct. Arnicæ, 1 to 4 drs.
 ——— Bucco, 1 to 3 drs.
 ——— Canab. Ind. 5 to 20 min.
 (22 min. contain 1 gr. Alcoholic Extract.)
 ——— Chiratsæ, 10 to 40 min.
 ——— Cocci, 30 to 90 min.
 ——— Conii Fruct. $\frac{1}{2}$ to 1 dr.
 (9 min. contain 1 gr. of Hemlock fruit.)
 ——— Croci, $\frac{1}{2}$ to 2 drs.
 Tinct. Ergotæ, 15 to 30 min.
 ——— Krameris, 1 to 2 drs.
 ——— Nux Vomica, 10 to 30 min.
 (11 min. contain 1 gr. of Nux Vomica.)
 ——— Sabinæ, 15 to 30 min.
 ——— Senegæ, 1 to 2 drs.
 ——— Stramonii, 10 to 20 min.
 Trochisci Acid. Tannic.
 (1 contains $\frac{1}{2}$ gr. Tannic Acid.)
 ——— Bismuthi.
 (1 contains 2 grs. White Bismuth.)
 ——— Catechu.
 ——— Morphis.
 (1 contains $\frac{1}{8}$ gr. Hydrochlor. Morph.)
 ——— Morph. et Ipecac.
 (1 contains $\frac{1}{8}$ gr. Hydrochlor. Morph. and $\frac{1}{2}$ gr. Ipecac.)
 ——— Opii.
 (1 contains $\frac{1}{10}$ gr. Ext. Opium.)
 Unguentum Aconiti.
 (1 oz. contains 8 grs. Aconitia.)
 ——— Atropis.
 (1 oz. contains 8 grs. Atropia.)
 ——— Calomel.
 (6 $\frac{1}{2}$ grs. contain 1 gr. Calomel.)
 ——— Cocculi.
 ——— Gallæ.
 ——— Hyd. Iod. Rub.
 ——— Plumb. Carb.
 ——— Subacet.
 ——— Simplex.
 ——— Terebinth.
 ——— Veratriæ.
 Zinci Acetas, 1 to 5 grs.
 — Carb. 2 to 10 grs.
 — Chlorid. $\frac{1}{2}$ to 2 grs.
 — Valerianas, 1 to 6 grs.

LIST OF IMPORTANT CHEMICAL AND PHARMACEUTICAL WORKS WHICH HAVE APPEARED DURING THE YEAR 1864.

CHEMISTRY.

Elements of Chemistry : Theoretical and Practical. By William Allen Miller, M.D., LL.D. Part 2. Inorganic Chemistry. Third Edition, with Additions. London : Longman and Co.

A Dictionary of Chemistry, and the Allied Branches of the Science. By Henry Watts, B.A., F.C.S. 8vo, to Part 22. London : Longman and Co.

The Second Step in Chemistry ; or, the Student's Guide to the Higher Branches of the Science. By Robert Galloway, F.C.S. 8vo, price 10s. 6d. London : Churchill and Sons.

Manual of the Metalloids. By James Apjohn, M.D., F.C.S. 8vo. London : Longman and Co.

Tables of Chemical Formulæ. Arranged by W. Odling, M.B., F.R.S. Price 1s. London : Taylor and Francis.

A System of Instruction in Qualitative Chemical Analysis. By Dr. C. B. Fresenius. Sixth Edition. Edited by J. Lloyd Bullock, F.C.S. Price 10s. 6d. London : Churchill and Sons.

Chemical Analysis : Quantitative. By Henry Noad, Ph.D., F.R.S., etc. 8vo, price 10s. 6d. London : Reeve and Co.

A Manual of Qualitative Analysis. By Robert Galloway, Professor of Chemistry in the Museum of Irish Industry. Fourth Edition, post 8vo, price 6s. 6d. London : Churchill and Sons.

The Laboratory Guide for Students of Agricultural Chemistry. Arranged by A. H. Church, M.A. London : Van Voorst.

BRITISH PHARMACOPŒIA.

A Companion to the British Pharmacopœia, comparing the Strength of the various Preparations with those of the London, Edinburgh,

- and Dublin, United States, and other Foreign Pharmacopœias ; with Practical Hints on Prescribing. By Peter Squire, F.L.S. First and Second Editions, 8vo, price 8s. 6d. London : Churchill and Sons.
- Notes on the British Pharmacopœia, showing the Additions, Omissions, Change of Nomenclature, and Alterations in the various Compound Preparations, with the Doses of those Medicines which are comparatively new. By A. F. Haselden. Fcp. 8vo, 2s. 6d. London : R. Hardwicke.
- The Chemical Processes of the British Pharmacopœia, and the Behaviour, with Reagents, of their Products. By Henry J. Church. Fcp. 8vo, price 2s. 6d. London : R. Hardwicke.
- British and London Pharmacopœias compared, with an abbreviated Materia Medica ; giving the Chemical Symbol, Equivalent, Natural Order, Habitat, Properties, Strength, and Dose of every Article in the British Pharmacopœia. By George Barber. Second Edition, price 2s. 6d. London : Simpkin and Marshall.
- The Prescriber's Analysis of the British Pharmacopœia. By J. Birkbeck Nevins, M.D. 32mo, price 3s. 6d. London : Churchill and Sons.
- The Prescriber's Pharmacopœia ; containing all the Medicines in the British Pharmacopœia, arranged in Classes according to their Action, with their Composition and Doses. By a Practising Physician. Fifth Edition, 16mo, 2s. 6d. London : Churchill and Sons.

MATERIA MEDICA.

- A Manual of Materia Medica and Therapeutics. By J. Forbes Royle, M.D., F.R.S., and Frederick W. Headland, M.D., F.L.S. Fourth Edition, fcp. 8vo, 12s. 6d. London : Churchill and Sons.
- The Essentials of Materia Medica and Therapeutics. By Alfred Baring Garrod, M.D., F.R.S. Second Edition, revised and much enlarged, small 8vo, price 10s. 6d. London : Walton and Maberly.
- Elements of Materia Medica ; containing the Chemistry and Natural History of Drugs, their Effects, Doses, and Adulterations. By Dr. W. Frazer, Lecturer on Materia Medica to the Carmichael School of Medicine, Dublin. Second Edition, price 10s. 6d. London : Churchill and Sons.
- Neligan's Medicines : their Uses and Mode of Administration. Edited by Rawdon Macnamara, M.I.R.A. Sixth Edition, 8vo, price 16s. Edinburgh, Macleachlan and Stewart ; Dublin, Fannin and Co. ; London, Longman and Co.

Manual of the Medicinal Preparations of Iron, including their Preparation, Chemistry, Physiological Action, and Therapeutic Use; with an Appendix, containing the Iron Preparations of the British Pharmacopœia. By **Harry Napier Draper, F.C.S.** Dublin, Fannin and Co.

On Glycerine and its Uses in Medicine, Surgery, and Pharmacy; being principally an Abstract of M. Demarquay's Treatise 'De la Glycérine,' etc. By **W. Abbotts Smith, M.D.** Fcp. 8vo, price 1s. 6d. London: **H. K. Lewis.**

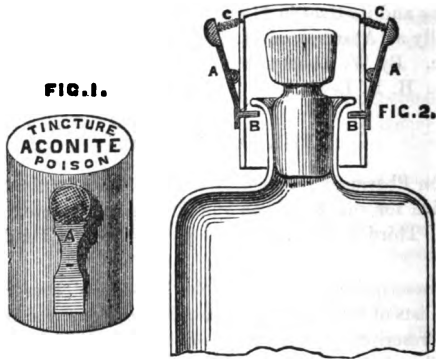
PHARMACY, ETC.

A Treatise on Pharmacy: Designed as a Textbook for the Student, and as a Guide for the Physician and Pharmaceutist, etc. By **Edward Parrish.** Third Edition. Philadelphia: **Blanchard and Lea.** Price 25s.

Selecta e Præscriptis: Selections from Physicians' Prescriptions, containing Lists of the Terms, Phrases, Contractions, and Abbreviations used in Prescriptions, etc. Fourteenth Edition, 24mo, 5s. London: **Churchill and Sons.**

Cooley's Cyclopædia of Practical Receipts, etc. Fourth Edition, revised and enlarged, by **A. J. Cooley and J. C. Brough.** London: **Churchill and Sons.** Price 28s.

Goddard's Price Book; or, Retail Counter Companion. Seventh Edition, 8vo, price 5s. Leicester: **J. Goddard.**

Howell's Safety Capsule.

The following is an explanation of the construction and action of the "safety poison capsule," of which the above woodcut is a diagram.

Fig. 1. Side view. A. Key.

Fig. 2. Sectional view on a bottle. A.A. Fulcrums of keys. B.B. Pins passing through sides of capsule, and grasping the neck of the bottle. C.C. Tops of keys, the faces of which are covered with sharp projections.

On pressing C.C. the pins B.B. recede from the neck and allow the removal of the capsule; on withdrawing the pressure, springs fitted at C.C. return the pins to their original position. Thus all desiderata are secured.

The capsule itself appeals to the dispenser's faculty of discrimination, whilst the spurs fitted into the faces of the keys appeal strongly to his sense of touch, reminding him of the dangerous nature of what he is dealing with, and directing his eye to the label on the top of the capsule, which contains the name of the drug.

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THE CHEMIST'S DESK COMPANION FOR 1866.

THE YEAR-BOOK OF PHARMACY:

A PRACTICAL SUMMARY OF RESEARCHES IN
PHARMACY, MATERIA MEDICA, AND PHARMA-
CEUTICAL CHEMISTRY,
DURING THE YEAR 1865.

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MATERIA MEDICA.

Botanical Origin of *Savanilla Rhatany*. (Hanbury.)

Hitherto nothing definite has been known as to the plant which produces a very excellent form of Rhatany commonly known as *Savanilla Rhatany*, or in what part of the vast territory of New Granada it is produced.

Mr. Daniel Hanbury, having endeavoured during some years past to elucidate these questions without much success, gladly took occasion of the recent mission to New Granada of Mr. Weir, collector to the Royal Horticultural Society, to suggest that inquiries should be made at Santa Maria regarding *Savanilla Rhatany*, and the locality where it is collected.

On the arrival of Mr. Weir in New Granada, he succeeded in ascertaining that the rhatany in question is obtained from the vicinity of Giron, a small town lying to the west of Pamplona, and about midway between it and the river Magdalena.

In the early part of 1864 Mr. Weir visited the valley of Giron, and succeeded in obtaining specimens of the plant in flower and fruit, and a small specimen of the root attached to the stem and branches. These he forwarded to England.

Upon examining these, Mr. Hanbury found that the roots were in every respect identical with the *Savanilla Rhatany* of commerce. Upon comparison, Mr. Hanbury came to the conclusion that the plant was a variety of *Krameria Ixina*, L., and in this was confirmed by Dr. Triana, who distinguished it as *var. β granatensis*.

This plant has an extensive geographical range, occurring not only in the locality already mentioned, but also in Brazil, in the

island of Stamaraca, near Pernambuco, as also in the Sertão of the province of Ceará. (Pharm. Journ. March, 1865, p. 460.)

Kola Nut of Tropical West Africa. (Daniell.)

The seeds of the Kola-tree (*Cola acuminata*, R. Br.) occupy an exalted position in the social or dietetic economy of the negro tribes, and constitute an important article of traffic in Soudan. For centuries the Kola-nut has been an article of commerce on the western coast of Africa, being used as a means for rendering water sweet and palatable (a fact much doubted by the author), and also masticated for the purpose of satisfying a special craving of the human system for a nitrogenous substance that tends to compensate for the void caused by deficiency of animal food.

Dr. Daniell gives a long account of the commercial history of the Kola-nut, and of its present extensive uses among the African tribes. His knowledge of the tonic and astringent properties of the Kola-seeds commenced as far back as 1850, when at Fort Christiansand, on the Gold Coast. With other diseases endemic to the settlement, a particular form of diarrhoea often prevailed among the European population. For its cure the white inhabitants were in the habit of administering a decoction of the fresh seeds, and with apparent benefit. Experiencing a similar form of attack, Dr. Daniell was relieved by resorting to the same remedy. Upon a return of this affection, while residing in Jamaica, Dr. Daniell again used the Kola-nuts, and to his surprise found that insomnia was induced, and its after-use was invariably followed by loss of sleep. This singular and well-developed phenomenon, the result of a powerful stimulant on the brain and nervous system, produced by some elementary principle analogous to caffeine or theine, led the author to infer, from physiological induction, that an analysis of the seeds would readily determine this point in the affirmative. Upon submitting the nuts to the process usually adopted for procuring theine, Dr. Daniell obtained the long needle-like crystals peculiar to theine or caffeine. Other samples of the nut were placed in the

hands of Dr. Attfield, who, on analysis, found that the opinion of Dr. Daniell was correct. (Pharm. Journ. 2nd ser. vol. vi. p. 450.)

Analysis of Kola Nuts. (Attfield.)

Kola-nuts were submitted to analysis by Dr. Attfield. He first sought for theine, which he found present to the amount of 2 per cent. No other acid, basic or neutral body, was found. Tannin is entirely wanting. An oil exists, possessing a smell resembling that of myrrh, and of a burning persistent taste. The composition of the nuts is as follows:—

	In 100 parts.
Water	13·65
Cell-wall and colouring-matter	20·00
Starch	41·50
Volatile Oil and fixed Fat	1·52
Albuminoid substance (probably Legumin)	6·33
Gum, Sugar, and other organic matter . .	10·67
Ash	3·20
Theine	2·13

Kola-nut is thus seen to somewhat resemble coffee, but differs in containing no tannin, but little fat, and much starch. When made into a beverage it is tasteless, odourless, and flavourless. (Pharm. Journ., March, 1865, p. 457.)

African Cubebs. (Archer.)

Professor Archer draws attention to the substance sent from Cape Coast Castle under the above name. It has no relationship to *Cubeba officinalis* or any other pepper, but is believed to be the fruit of *Vepris lanceolata*, Jussieu, Natural Order *Xanthoxylaceæ*, which is celebrated for the agreeable pungency of the fruits of many of its species. The plant is common in the woody districts of many parts of the Cape, and is found in Mauritius. Although it slightly resembles cubebs, it has no affinity with the peppers. Capsule dry, dehiscent; seeds hard, bluish-black, shining, kidney-shaped. Properties simply aromatic and stimulant. (Pharm. Journal.)

Cape Saffron. (Archer.)

Cape Saffron, which resembles ordinary saffron in all but its colour, is the dried flower of a very small plant extremely common in some parts of the Cape of Good Hope, resembling our common Toad-flax, *Linaria vulgaris*, Mill., and belonging to the same Natural Order *Scrophulariaceæ*. It yields a colour like that of saffron, and yields it as readily even when mixed with cold water; its odour is also that of good saffron, and equally strong. Two importations have taken place during the last five years, but the drug has met with but little success in the market.

The flowers are called *Geele bloemetjee*, and they are used by the Mahometans for dyeing their handkerchiefs, as also as an antispasmodic anodyne and stimulant in the convulsions of children.

It is not said, however, what particular species of plant produces this saffron. (Pharm. Journ.)

Habitat of the Pitayo Cinchonas, etc. (Cross.)

Mr. R. Cross remarks that the natural climate of the cinchonas of the Andes has been much misrepresented. The plants do not flourish amidst perpetual torrents of rain and mist, but require dry weather and sunshine for the ripening of the capsules and for their bursting, in order that the seeds may fall to the earth. Mr. Cross states that the Pitayo Cinchona differs essentially from the *C. lancifolia* of Karsten, which is a larger tree, and bears considerably larger leaves than those of the Pitayo Cinchona. This large-leaved Cinchona inhabits the western slopes of the Cordillera Orientale, between the Pasto and the city of Santa Fé de Bogotá; while the finer kinds of Pitayo bark are limited to a few square miles of steep forest-covered slopes, to the northward of the volcano Puracé, which belongs properly to the Central Cordillera. Mr. Cross considers M. Weddell's map of the Cinchona region of New Granada to be incorrect. It represents certain tracts of country as mountains, and covered with Cinchona forests, while in reality they are

savannas covered with low-spreading leguminous trees, where no Cinchonas ever grew. The *C. lancifolia* is very inferior to the true Pitayo bark in its yield of quinine, but the former is exported into England under the latter name, all of which, however, finds its way into France. True Pitayo bark may be known by not being much thicker than common window-glass, being taken from small trees. (Gardeners' Chronicle; Pharm. Journ. 2nd ser. vol. vii. p. 121.)

Chemical Composition, etc., of *Scilla Maritima*. (Schroff.)

In a long and elaborate paper in Schmidt's Jahrb., Dr. Schroff discusses a series of questions relating to the medicinal characters of *Scilla maritima*. He first discusses the question whether the squill bulbs of commerce are derived from one or two species, and he comes to the conclusion, that although a red and white bulb of the squill are known, yet that they belong to the same species, and that the colour depends upon the nature of the soil and the place of growth. The red bulb has a more strongly bitter taste in its external and middle layers, and the raphides occur in the red somewhat less abundantly, but rather larger in size, than in the white. Exposure to the sun, a higher station, and a greater distance from the sea, appear to produce the white colour; while a deeper position in the ground, the proximity of the sea, and the greater covering of earth, develop the red. Transitions from one variety to the other are often observed. In reference to the relative activity of the two varieties of the squill, and of the different parts of the same bulb, Dr. Schroff observes, that the most external coats, which are tasteless and without parenchyma, are admitted to possess no active properties, and therefore the middle coats, or those which are relatively external in position, are preferred for use, and that the red bulb is more active than the white.

In reference to the physiological action of Squill, Dr. Schroff believes that the more the acrid principle prevails in quantity in the preparations used, the more violent is the action on the

lungs; while *Scillitia*, which has but little taste, occasions more of the phenomena of narcotism. Squill ought, therefore, to be placed among the narcotic-acrids near hellebore and colchicum. (Wiener Wochenblatt; Philadelphia Med. Rep.; Dub. Med. Press, Oct. 18, 1865.)

Oabig Bark. (Mayer.)

A bark bearing the above title has been lately offered in the American market. Professor Mayer, upon examining it, found it to be identical with the bark of *Unona polycarpa*, DC., described by Stenhouse, Pharm. Journ. xiv. 455, and by Daniell, *ibid.* xvi. 398,—a tree indigenous to Sierra Leone and Soudan, and known in England as Abeocouta bark, employed in the treatment of indolent ulcers and leprous sores peculiar to the tropics, in the form of a coarse powder or decoction externally applied. Professor Mayer found that the proximate principles of this bark are analogous to those of the officinal *Berberis*, and also to those of *Caulophyllum thalictroides*, Michx., which latter however contains no trace of berberina or any other yellow colouring-matter. (Amer. Journ. Pharm. May, 1865.)

Sacred Bark. (Mayer.)

Under the above name, an aromatic bark of some large Oriental tree has been offered in the American market. It occurs in flat, irregular, heavy pieces, from one-half to an inch in thickness, bearing the marks of a large axe or similar cutting-instrument. It has a foliated pale reddish-yellow liber, covered with a more or less resinous reddish envelope, and a corky layer, deep brown beneath, and paler brown or ash-coloured without. It has a strong odour of Peruvian balsam, or rather of a mixture of cinnamon and sassafras. It also resembles and contains a soft resin with the odour of storax. After some investigation, Professor Mayer thinks that this bark belongs to a *Liquidambar*, bearing the greatest resemblance to the description of the trunk-bark of *Liquidambar altingiana*, Blume. He also thinks it may

turn out to be the *Nurcapthou* of Dioscorides, under which name the ordinary storax-bark has been supposed to be understood, but which is not an Indian drug. (Amer. Journ. Pharm. May, 1865.)

Ergot of the "*Diss.*" (Lallemonet.)

Ampelodesmos tenax, Link, or the Arab "*diss.*" a plant found in Algeria, yields a fungus which possesses all the properties of ergot of rye. It is from one-ninth to one-third of an inch long, and from one-sixth to one-eighth of an inch thick; and of a blackish or chestnut-black colour. It is found to keep very well. The following analysis has been made by M. Lallemonet:—

Fatty Oil and Crystalline Fat	30·6
Ergotine (Wiggers)	2·3
Vegetable Albumen	3·6
Sugar, Gum, and Nitrogenous Matter .	7·0
Fungin	50·2
Salts of Lime and Silica	6·2

Experiments were made during the course of a year with the preparations of *diss* ergot, and the trials were crowned with complete success. The dose employed is one-half less than that of ergot of rye. (Gaz. Méd. d'Algérie; Journ. de Pharm. June, 1865.)

Occurrence of Ergot on different Plants. (Kühn.)

Dr. Kühn has observed the ergot to occur on twenty-eight graminaceous and five cyperaceous plants growing in different positions and on soils of opposite qualities. He comes to the conclusion that moist bad soil and low position have little to do with its development. The fungus (*Claviceps purpurea*, Tulasne) produces in from twenty to thirty capitula upwards of a million spores, which readily germinate. He reared the ergot from spores placed in flower-pots. (Wittstein's Vierteljahr. für Prak. Pharm. 8, xiv.)

Caramania Gum. (Procter.)

Professor Procter describes a gum known under the above name. He believes there is little doubt that it is the same gum described by Mr. S. H. Maltass, Pharm. Journ. vol. xv. p. 20, as one of the gums used to adulterate tragacanth. It is stated to be employed to the extent of 50 per cent. to adulterate the commoner varieties of tragacanth, and is sometimes whitened by the addition of white-lead. Mr. Hanbury, in a note to the above paper, states that caramania gum appears identical with *Gomme pseudo-adragante* of Guibourt, regarded by that author as the product of *Astragalus gummifer*, Labill.; but Mr. Maltass, says report, refers it to the wild almond, a plum of Caramania. Dr. Wood considers Caramania gum to have the same origin as the gum of Bassora; the latter entering commerce by the Persian Gulf, whilst the former comes to Smyrna to be used as an adulterating agent.

Its colour varies from light- to reddish-brown. It is rather less soluble than tragacanth. A solution of oxide of copper in potash instantly precipitates both the gelatinous insoluble portion and the soluble gum as a bulky bluish hydrate. (American Journ. of Pharmacy.)

Cantharides of the Argentine Provinces. (Burmeister.)

Dr. Hermann Burmeister specifies the following *cantharides* which occur in the Argentine Republic. They are all used in that country for vesicating purposes.

1. *Horia maculata*, Fabr. Lives with the great bees which make their nests in the trunks of vines. Is above an inch long. Yellow colour with black spots on the elytra.

2. *Tetraonyx*, Latr. This has the body shorter and broader than the other genera of the same family. Three species of this genus have been collected.

3. *Cantharis*, Latr. Eight species have been found by Dr. Burmeister, of which three were previously known, viz. *adspersa*, *punctata*, and *vittigera*. The other five are new species, one of which is probably the most efficacious of the Argentine insects.

4. *Nemognatha nigricornis*, Burm., known by the prolongation of the mandible into a longish thread. (Revista Farmaceutica, January, 1865; Pharm. Journ. April, 1865; Amer. Journ. Pharm. July, 1865.)

Chinese Sal-Ammoniac. (Hanbury.)

Naou-sha is a drug which is sold at an exorbitant price in the Chinese drug-shops, remarkable virtues being ascribed to it. Mr. Daniel Hanbury examined a specimen and found it to consist of chloride of sodium with traces of an alkaline sulphide. Other specimens examined, although sold under the same name, proved to be sal ammoniac, which Mr. Hanbury believes to be of volcanic origin. (Pharm. Journ. vol. vi. p. 514.)

Datura Stramonium and D. Tatula. (Naudin.)

M. Naudin, believing that the above were not varieties of the same species, as some botanists have argued, made some experiments which lead to the conclusion that *D. Stramonium*, L., and *D. Tatula*, L., are distinct species. He crossed the two plants, and obtained hybrids remarkable for a gigantic size and exhibiting a tendency to sterility. These hybrids, however, at the second generation spontaneously dissevered, and divided their offspring between the two species, thus returning to their original and distinct forms. (Flore des Serres, July, 1864.)

Occurrence of Aconite Root with Jalap. (Schroff.)

Professor Schroff states that the roots of *Aconitum ferox* have been found at Constantinople with Jalap tubers. He points out the differences, which are well known. (Bnchner's Neues Rep. für Pharmacie, 367, xiv.)

Oil of Madia Sativa.

This oil is yielded by the seeds of the above plant (*Compositæ*) on pressure. The plant is grown in Chili, where it has long

been cultivated on account of its oil, which is of excellent quality. The seed is like that of the sunflower, but much smaller. The oil is used in place of olive oil,—the finer quality for edible, and the grosser for illuminating purposes. It has been introduced from Chili into Asia Minor, and from thence into Algeria and the south of France, and into some warm parts of Germany.

The plant yields 240 pounds of oil per German acre. It does not congeal at 190° below zero of Réaumur, but only becomes a little less fluid. This oil is known in Germany as “Olbegende Medicraut” or “Olmud.” (Technologist.)

Analysis of the Seeds of Phormium Tenax. (Adriani.)

Seeds.

Water driven off at 212°	8.01
Oil extracted by Ether	20.08
Resinous matter soluble in Alcohol	3.80
Gum, mucilage, inuline-like Starch, and a trace of Legumin soluble in boiling water	14.32
Albuminous compounds	18.21
Woody Fibre	50.96
Ash	4.55

The crushed seed has a pleasant smell, and in contact with warm water distinctly reminded Dr. Adriani of the fragrance of the orris root. (Chem. News, xi. 112.)

Veratrum Viride. (Bullock.)

Mr. Bullock gives a series of elaborate experiments, conducted for the purpose of isolating veratria and the resin associated with it in *Veratrum viride*, Willd. The author promises a further examination of the subject. (Amer. Journ. Pharm.; Chem. News, Dec. 1, 1865.)

Sugar of the Sorghum. (Joulie.)

The author contributes a long paper on the above subject, considered from botanical, agricultural, chemical, physiological,

and industrial points of view. (Journ. de Pharm. March, 1865, p. 188.)

Italian Castor Oil. (Phillips.)

Mr. Phillips writes from Naples on this subject as follows:—The Castor-oil plant here attains a height of from 10 to 16 feet, and is generally biennial, sometimes triennial; the seeds, which are ripe in the middle of autumn, are generally smaller than the East Indian; some are of a uniform dark colour, others very prettily streaked.

The oil is generally prepared during the following summer, the warmth of the weather causing a more abundant yield of oil. The outer skin is removed by cracking the seeds with a hammer on a marble slab, which operation is performed by women, the skins being blown away by a kind of fan; they are then placed in the press, which is lined with filtering-paper, pressure is applied very gently, and extends over several days, the oil is again filtered as it runs from the press, and is set aside that any little fecula still remaining may deposit. Exposure to the sun is always avoided, from its tendency to produce rancidity. This oil is of a very pale colour, nearly odourless, and possesses hardly any taste. Unfortunately, the wholesale price of this oil is the same as the retail price of much that is sold in England, therefore very little can find its way into the English market.

The variety of Italian Castor Oil prepared for exportation is made at all seasons of the year; very little care is taken in decorticating the seeds, which are triturated between stones into a paste before pressing, and steam heat applied during the process. Frequently they are beaten with the skins into a paste, and the oil then filtered through paper or flannel after having been mixed with animal charcoal, the filtering being conducted in a heated room.

I have learnt from good authority that large quantities of East Indian seed are imported into Italy, and furnish much of the oil exported from this country.

The oil last mentioned has a much stronger odour, and more acrid taste, and is also more coloured than the first ; but is less disagreeable (when from Italian seeds) than the Indian or American oils. With regard to the real question, as to the cause of the less nauseous taste of the "Italian Oil," I can only ascribe it to the fact of the oil being prepared from fresh seeds, well decorticated, often not bruised, and without heat. The oil obtained from seeds three or four years old has a much stronger odour and taste, in fact the oil keeps sweet much longer when expressed than in the seeds.

The variety exported, if prepared from fresh seeds and without much heat, enjoys to some extent the same properties, and is more active than the finest variety.

The seeds themselves are sometimes used as a purgative, two seeds grated and taken in water having the same effect as an ounce of oil.

The oil is often taken in the form of an emulsion. 1 oz. with 1 oz. of syrup and $\frac{1}{4}$ oz. powdered gum are well mixed in a dry mortar, stirring always in the same direction. When it becomes sticky, a little peppermint or orange-flower water is added, and 4 oz. distilled water gradually stirred in. This forms a most elegant emulsion, with scarcely the slightest taste of the oil ; it is called here, "Olio di Ricini a l'Inglese." (Proc. Pharm. Conf., Pharm. Journ. Oct. 1865.)

Alcohol as a Test for the Purity of Croton Oil. (Warington.)

Mr. R. Warington, F.R.S., has published some experiments relative to the alcohol test for the purity of croton oil given in the British Pharmacopœia. Mr. Warington gives his experiments in detail, and concludes as follows :—

What conclusions now can we deduce from these results ? My own opinion is that freshly-expressed croton oil, or rather, I should say, *oil* expressed from *fresh seeds*, either abroad or in this country, does not dissolve in alcohol having a specific gravity from $\cdot 794$ to $\cdot 796$, to a greater extent than twenty per cent. at the temperature of 50° ; but that if croton oil has undergone a

chemical change, such as resinification or oxidation by time and exposure to the air, as in the old oil of the above experiments, or has been freshly expressed from seeds which have become changed in the same manner, then the oil is dissolved freely by the alcohol, as shown above and in the experiments of Dr. Pereira, which I consider therefore must have been made with Croton Oil, freshly expressed it is true, but from seeds which had undergone a chemical change; and this accords with his own deductions from his experiments. At the same time I cannot but consider that a *test* which is open to so many weighty objections, both from the influence of small fluctuations of temperature, and for indicating the purity of a material liable to such marked differences from the effects of such natural and in some cases inevitable chemical changes, is perfectly useless as a reliable indication of purity. (Pharm. Journ. Jan. 1865.)

Indian Species of Barberry. (Stewart.)

Mr. W. L. Stewart, in a paper read before the Pharmaceutical Society, refers to the medicinal uses of the bark of the different species of *Berberis*. He is inclined to the belief that the basis of Warburg's Drops is tincture of barberry. (Pharm. Journ. vii. p. 303.)

Substitution of Barberry Bark for Pomegranate Root Bark. (Bentley.)

Professor Bentley states that he has had instances of this substitution brought under his notice. The Barberry Bark may be readily distinguished by its great bitterness. (Pharm. Journ. vii. p. 305.)

Researches on Germination. (Fleury.)

An interesting paper on the above subject occurs in the Journ. de Pharmacie, April, 1865, p. 256.

Non-Exhalation of Carbonic Oxide by Plants. (Corewinder.)

The author has devised an apparatus, which enables him to estimate minute quantities of Carbonic Oxide in the atmosphere,

By this apparatus, the author has investigated the question of whether plants really exhale, or not, carbonic oxide or other combustible gases. He arrives at the following conclusions :—

1. That there is no appreciable quantity of combustible gases in the atmosphere.

2. That none are evolved from putrefying dung or manures.

3. That none are to be detected in the gaseous products emanating from even the most odoriferous flowers.

4. That none are evolved from the leaves of plants, either by day or night, in sunlight or in shade.

5. That when a plant is submitted to the action of the sun's rays, in presence of a notable proportion of carbonic acid, this gas is absorbed with rapidity, but the leaves exhale no trace of oxide of carbon.

These latter experiments were not made upon mutilated plants; they were made in the country, in the author's garden, upon plants living in a normal state. (*Comptes Rendus*, t. lvii. p. 413.)

Nicotina in Tobacco Leaves and Seeds, etc. (Mayer.)

Professor Mayer volunteered to answer the following query put by the American Pharmaceutical Association :—“ Is nicotine the active principle in carefully-dried tobacco leaves? Do the seeds of tobacco contain the same alkaloid, and, if so, does the proportion of nicotine in commercial tobacco justify the belief of Liebig, that it is an artificial product? ”

170 grains of *green* leaves yielded 2·345 grains of nicotine.

666 grains of leaves which had become somewhat *tainted*, yielded 9·37 of the alkaloid.

2 troy ounces of *commercial* tobacco yielded 13·25 grains of nicotine.

3 troy ounces of *tobacco seed* yielded 6·45 grains.

The leaf, stalks, and ribs of the commercial leaf, and the liber of the green stalk, yielded noticeable quantities of the alkaloid.

The conclusions submitted by Professor Mayer are—

1. That nicotine is the active principle in all parts of the plant, before and after curing.

2. That there is in all probability no increase, but rather a loss of nicotine during the drying and curing, partly or wholly caused by volatilization; and—

3. That the plant or its parts contain no trimethylin,* nor any ammonia while fresh. (Proceedings Amer. Pharm. Assoc. 1865.)

Poison of Fungi. (Sicard and Schoras.)

From experiments made, the following conclusions are arrived at by the authors:—

1st. That the poisonous principle that exists in many species of fungi ought to be regarded as an alkaloid, as it unites with acids and forms salts.

2nd. This alkaloid, obtained by a process described in the paper, is extremely poisonous. The employment of an indefinitely small quantity was always mortal to frogs. A small quantity also was sufficient to kill a dog; and it is remarkable that the effects upon the animal system by this substance, are the same as those observed recently from *curarin*. (Journ. de Pharm. June, 1865.)

Action of Petroleum on the Human System. (Landerer.)

A man swallowed a quantity of petroleum, the greater part of which he vomited again. It caused a strong burning sensation in the tongue and throat, which were reddened, and became swollen. The stomach and bowels were also affected, and slightly gastro-enteritis ensued. For several days the urine and sweat smelt strongly of the oils, and the odour was specially strong under the armpits. The patient was very weak, but recovered. (Chem. Centralblatt; Dub. Med. Press, Aug. 2, 1865.)

* (Pseudo-propylamin), a volatile principle, said to have been mistaken by Buchner for nicotine, but which doubtless never existed.

Action of Woorari Poison. (Bernard.)

It has hitherto been imagined that the action of *curare*, when applied to a wound, is to cause death without any visible struggle and without pain. Dr. Claude Bernard has shown this notion to be utterly erroneous. He states that the paralysis creeps gradually on from limb to limb, depriving the animal of motion, and yet without in the slightest degree affecting its intellectual faculties or power of volition, which remain unimpaired to the last moment. This he considers to be one of the greatest tortures to which an intelligent being can be subjected. Death is caused by the paralysis of the respiratory organs, which cease to provide the blood with the quantity of oxygen it requires. This being the case, a poisoned animal may be restored to life by the mechanical injection of air into the lungs. This important fact Dr. Bernard proved by actual experiment, finding that in the course of a few hours the poison was eliminated. (*Comptes Rendus*, June 26; *Journ. de Pharm.*, August, 1865; *Revue des Deux Mondes*.)

Action of Calabar Bean and its Alkaloid upon the Animal System. (Haigh.)

In experimenting with Calabar Bean, Professor Christison found that highly poisonous effects result from the administration of comparatively small doses (*Pharm. Journ.* xiv. 470.) Mr. Nunnally also obtained well-marked poisonous effects upon a dog in forty minutes from a dose of 12 grains of the bean (the same dose employed by Christison). Dr. Haigh has also operated upon animals with Calabar Bean, commencing with a dose of 5 grains, which produced no effect. He then administered 12 grains, and afterwards 15 and 35 grains, but was surprised to find that although he used as large doses as had before been used by Christison and Nunnally, the effects were by no means so marked,—in fact, no poisonous effects were produced. He then administered to the same animal upon which

he before operated 2 grains of the alkaloid. The effects produced were those of an intoxicant, accompanied by vomiting and faecal evacuations, but nothing indicated that the animal suffered pain. Death took place twelve hours after the administration of the poison; autopsy showed no lesion whatever. The brain, stomach, intestines, and mucous surfaces appeared in a perfectly normal condition.

From experiments conducted upon rabbits and pigeons, Dr. Haigh came to the conclusion that death results rather from paralysis of the whole muscular system than by immediate paralysis of the heart.

The bean itself given in powder is very uncertain in its action; but the alkaloid isolated from the starch, inert matter, etc., of the bean is very marked in its effects. (Amer. Journ. Pharm. May, 1865.)

Capsicum Annuum. (Preston.)

From many experiments made on the above plant, which will be found enumerated in an inaugural essay presented to the Philadelphia College of Pharmacy, Mr. Preston has thus summarized the results:—He draws the conclusion that the activity of the plant is not due to an alkaloid, but to a fixed oil, either as a fixed oil or to a principle dissolved in the oil, which may be volatile, but for isolating which there has not yet been found a process.

Mr. Preston is strongly inclined to believe that the latter is true, and suggests that it may be decided by procuring a quantity of the fixed oil, and washing it with repeated small portions of alcohol, diluted, so as not to dissolve the fixed oil, and then separating the pungent principle from this liquid by evaporation, and washing with ether, or by the action of animal charcoal, as in the process of M. Lebourdais. (Amer. Journ. Pharm. May, 1865.)

Physiological Action of Carbonic Acid. (Demarquay.)

M. Demarquay, in a memoir presented to the Academy of Sciences, gives the following conclusions:—1. Carbonic acid has an irritant action on the skin, especially in the more secretive parts, such as the perineal region. 2. Analgesia of the skin is obtained only by the influence of a continuous jet of the gas on a very limited part of the body. 3. The action on the organs of sense is analogous to that on the external integument; there are lively excitement, sensorial exaltation, or nervous perturbation,—all these phenomena being generally very transient. 4. The action on the digestive organs is stimulant, and is attended by slight neuro-vascular excitement. 5. Injected into the veins, carbonic acid is absorbed in large quantity, and is rapidly eliminated if the experiment be carefully performed; otherwise it produces distension of the cardiac cavities, and death. 5. Carbonic acid introduced into the air-passages does not produce the toxic effects commonly attributed to it. Mammalia can remain for some time without serious inconvenience in an atmosphere of common air or oxygen mixed with from 20 to 25 per cent. of carbonic acid. In man, some slight disturbance occurs at a time varying with the susceptibility of the individual. When death follows the inhalation of this gas, whether in man or in animals, the post-mortem appearances are different from those produced by carbonic oxide, the effects of which have often been confounded with those of carbonic acid. 7. Most of the accidents produced by the fumes of charcoal, by confined air, by the vapours arising from stoves or from fermentation, have been erroneously attributed to carbonic acid; they ought in great part to be laid to the charge of carbonic oxide, sulphide of hydrogen, alcoholic vapour, and other imperfectly-known gases. 8. Carbonic acid is simply irrespirable; because, being of the same nature as the gas expired from the lung, a physical interchange of gases cannot take place. Hydrogen and nitrogen are less immediate in arresting respiration than carbonic acid, because they allow the physical interchange to go on for a short

time. 9. Anæsthesia cannot be produced in man by carbonic acid without danger of asphyxia; and, even if it could be safely produced, it would be too transient to be of service in operations. (Gaz. Méd. de Paris; Brit. Med. Jour.)

Belladonna as an Antidote in Poisoning by Laudanum, and Opium as an Antidote in Poisoning by Belladonna. (Lucas.)

Dr. Prestwood Lucas gives the details of a case of poisoning by Laudanum in a child of eleven years of age. After a trial of the usual remedies, he applied electro-magnetism in conjunction with Extract of Belladonna. Altogether, the child took 16 grains of Extract of Belladonna in less than three hours.* Dr. Lucas attributed recovery chiefly, if not entirely, to the use of this drug.

Dr. Anderson also mentions a case of a patient who was plunged into the profoundest narcotism by the administration of 2 ounces of the solution of hydrochlorate of morphia in the course of thirty-six hours. He was made to swallow a drachm of tincture of belladonna in water every half-hour, and in four hours was out of danger. He also relates other cases in which all indications of Opium poisoning disappeared under the use of Belladonna.

In Belladonna poisoning a strong solution of morphia was injected into the gluteal region, succeeded by complete recovery. A case is also on record of Opium having been given with signal benefit in poisoning by eating the ripe berries of *Atropa Belladonna*. (Med. Times and Gaz. Feb. 25, 1865.)

Dr. Camus, of St. Quentin, raises the question whether, from such observations as are recorded above, there can be logically

* The tolerance of large doses of Belladonna by young children is remarkable. Dr. Fuller mentions a case of a child ten years old taking 70 grains of Extract of Belladonna daily, and a total amount of rather more than 2 ounces in twenty-two days. Another child of fourteen took no less than 37 grains of atropine in eighteen days. (Med. Times and Gaz. Feb. 25, 1865.)

deduced a general therapeutical law, and establish on principle the fact of the antagonism of Opium and Belladonna. He affirms that he has reproduced in his inaugural thesis all the experiments of poisoning by Opium treated by Belladonna which he could procure, and that he could not find an irrefutable experiment of fact which proved the antagonism of the two medicines.

From experiments made by himself on rabbits, he came to the conclusion that death took place more rapidly when atropine was given as a counter-poison against Opium than when the animal was allowed to die from the effects of Opium; and he believes that with a majority of three to one he has proved that belladonna is not antagonistic to Opium. (Dub. Med. Press, September 27, 1865.)

**Oil of Yellow Sandal-wood and Gurgina Balsam, or
Wood Oil, in Gonorrhœa. (Henderson.)**

Dr. Henderson has drawn the attention of the medical profession to the above drugs as specific remedies for gonorrhœa. Oil of Yellow Sandal-wood is the produce by distillation of the wood of the tree *Sirium myrtifolium*, growing in the East Indies. The author, in his experiments, found the oil to be perfectly innocuous, even in large doses. The ordinary formula employed by the author is the following:—20 to 40 minims of Oil of Yellow Sandal-wood three times a day, diluted with three parts of rectified spirit, and flavoured with Ol. Cassiæ or Ol. Cinnam. He administers water and a confection after. A marked suppression of the discharge often occurs within forty-eight hours.

Dr. Henderson has also used Gurjun, Gurgina Balsam, or Wood Oil, the product of *Dipterocarpus turbinatus*, a large tree growing in different parts of India. Wood Oil is a liquid of the consistence of olive oil, of a dark reddish colour, and slight odour. It was introduced into England some years ago, but Dr. Henderson thinks under great disadvantages, having been

mixed with copaiba, and thus acquired a reputation as a mere adulterant. From an account given by Mr. Waring, in his 'Manual of Practical Therapeutics,' the author was induced to replace copaiba by Wood Oil, giving it in large doses, a teaspoonful two or three times a day, uncombined. He only used it in cases where copaiba had failed, and found its administration attended with complete success.

Further particulars of this drug will be found in Pereira's *Mat. Med.*, Waring's *Therapeutics*, and Bentley's *Botany*. (Medical Times, June 3, 1865.)

PHARMACEUTICAL CHEMISTRY.

Preparation of Subnitrate of Bismuth, free from Arsenic. (Vitali and Pedroli.)

To separate the arsenic, which is frequently present in metallic bismuth, the authors recommend that the metal should be dissolved in nitric acid, and the solution concentrated as usual. A small quantity of water, sufficient to produce a slight precipitate, should then be added. They state that this precipitate contains the arsenic in the state of arseniate of bismuth, mixed with a little subnitrate. The precipitate should be separated by filtration through gun-cotton. They also recommend that the traces of iron, copper, and silver should be removed from the filtrate, by the addition of small quantities of a solution of ferrocyanide of potassium, these metals being all precipitated before the bismuth is attacked. Pure subnitrate of bismuth may then be prepared from the filtrate in the usual manner, or the bismuth may be thrown down as subcarbonate, by the addition of an excess of bicarbonate of soda. (Journ. Chem. Med. November, 1865, p. 619.)

Bismuthi et Ammoniae Citras. (Bartlett.)

Mr. N. Gray Bartlett gives the following forms for preparing Liquor Bismuthi, and also the Ammonio-Citrate of Bismuth in scales :—

The writer, having observed the solution of Citrate of Bismuth,

obtained by the addition of Ammonia, to have an acid reaction, and also that an excess of that alkali occasioned a precipitate of oxide of bismuth, inferred the existence of a compound salt of bismuth and ammonia; this was subsequently confirmed.

The following formulas, suggested by theory and numerous experiments, were finally adopted:—

Bismuthi Citras.

Take of

Subcarbonate of Bismuth, a troy ounce;
Citrate of Potassa, a troy ounce and 120 grains;
Nitric Acid, a troy ounce and a half;
Distilled Water, a sufficient quantity.

Dissolve the subcarbonate of bismuth in the nitric acid, and, when effervescence has ceased, dilute the solution with a fluid ounce and a half of distilled water, gradually added. Dissolve the citrate of potassa in two pints of distilled water, and *to this* liquid add slowly, with constant stirring, the acid solution of bismuth.

Permit the mixture to stand for several hours; then pour it on a moistened paper filter, and when the liquid has nearly ceased to pass, cover the surface of the precipitate with distilled water.

Repeat this operation until the washings no longer contain nitric acid. Allow the magma to drain, and dry it on bibulous paper, with a gentle heat.

Bismuthi et Ammonia Citras.

Take of

Citrate of Bismuth, in powder, a convenient quantity;
Stronger Water of Ammonia,
Distilled Water,—each, a sufficient quantity.

Rub the Citrate of Bismuth with sufficient distilled water to reduce it to a uniform pasty consistence, and add cautiously, with constant trituration, stronger water of ammonia, until a solution is obtained, observing to avoid an excess of ammonia.

Filter the liquid through paper, returning the first portions that pass, should they be turbid.

Spread the clear solution on glass, that the salt may dry in scales.

Liquor Bismuthi et Ammonia Citratis.

Take of

Citrate of Bismuth and Ammonia, 260 grs.

Alcohol, 2 fl. oz.

Distilled Water, 14 fl. oz.

Water of Ammonia, a sufficient quantity.

Dissolve the Citrate of Bismuth and Ammonia in the distilled water; neutralize the liquid with water of ammonia, and mix it with the alcohol.

Or, take of

Citrate of Bismuth, recently precipitated and still moist, a convenient quantity.

Water of Ammonia,

Alcohol,

Distilled Water,—each, a sufficient quantity.

Add gradually to the Citrate of Bismuth water of Ammonia, until the precipitate is dissolved, and a neutral solution is obtained. Dilute this with its volume of distilled water, and filter through paper, returning the first portions of the filtrate, if necessary, until the liquid passes clear.

To half a fluid ounce of this solution add hydrosulphate of ammonia in slight excess. Pour the mixture on a tared paper-filter, wash the precipitate thoroughly with distilled water, and dry it at a temperature of 212° . Weigh the filter and its contents, deducting the weight of the former to obtain that of the tersulphide of bismuth, which, in grains, is to form the third term in a rule-of-three proportion, thus:—

$$\begin{array}{l} (\text{BiS}_3) (\text{BiO}_3) \\ 261 : 237 :: \end{array}$$

the weight of tersulphide of bismuth to that of teroxide of bismuth in half a fluid ounce of the solution.

Apply the same ratio to the remainder of the liquid, and dilute it to such an extent that a grain of teroxide of bismuth will be contained in each fluid drachm of the finished solution; seven-

eighths of which measure must be made up with distilled water, and the remainder with alcohol.

For preparing the Citrate of Bismuth, the subcarbonate is preferable to the subnitrate, because of its more uniform composition, as well as its greater purity, at least in commercial specimens of these salts. The metal itself is inferior to either, as it is almost invariably contaminated with arsenic. (Amer. Journ. of Pharm.; Pharm. Journ. April, 1865.)

Liquor Bismuthi. (Blunt.)

Mr. T. P. Blunt gives the following process for this preparation:—

Take of Subcarbonate of Bismuth, 2 oz.

Citric Acid, $1\frac{1}{2}$ oz.

Nitric Acid, 3 oz.

Water,

Solution of Potash,

Spirit of Wine,—of each what is sufficient.

Dissolve the bismuth in the nitric acid, add sufficient water to take up the nitrate precipitated (from two to three ounces); carefully avoiding excess. Dissolve the citric acid in the solution thus formed (which will not be perfectly clear), and add gradually solution of potash (Liquor Potassæ) until the mixture is only faintly acid, and gives, after filtration, but a slight cloud on the addition of more potash. Filter, collect the precipitate, wash slightly (the presence of a trace of nitrate of ammonia in the product is of no consequence), and transfer the precipitate to a dish; add solution of ammonia gradually, until the precipitate is dissolved (a little oxide will remain); filter. Measure 4 fluid drachms of the solution, add excess of sulphide of ammonium, collect the precipitate on a counterpoised filter, wash, dry, and weigh; 261 grains of the precipitate thus obtained represent 237 of oxide of bismuth. Dilute the whole of the solution with water and spirit of wine, in such proportions that a mixture of 1 part of spirit with 7 of water shall contain the required number of grains (I generally prefer 4) to the drachm of

solution. In the above process, it is especially necessary to avoid the addition of an excess of potash, which appears to decompose the citrate formed and precipitate an oxide insoluble in ammonia, and this appears indeed to take place to some extent previously to saturation; a slight waste is therefore incurred, by leaving the solution faintly acid, in order to avoid the formation of this insoluble precipitate. (Pharm. Journ. May, 1865.)

Liquor Bismuthi. (Tichborne.)

Mr. C. R. C. Tichborne gives the following quick and simple method of making this liquor:—A known weight of crystallized Nitrate of Bismuth is dissolved in a small quantity of water, to which has previously been added a like weight of citric acid. Ammonia is then added until it is neutralized, when it may be at once made up to the required strength by the addition of water. This solution may be made any strength (50 per cent. if necessary), and will keep indefinitely. It contains in addition to the bismuth and citrate of ammonia a little less than $1\frac{1}{2}$ grains of nitrate of ammonia for every 3 grains of nitrate of bismuth used. (Pharm. Journ. June, 1865.)

Iodide of Potassium. (Payen.)

It is remarked by the author that Iodide of Potassium is seldom found in a state of purity. It is usually alkaline, and nearly always contains an excess of iodine. The saturated solutions of iodide and also of bromide of potassium, unlike the alkaline chlorides, act in the cold on starch granules, which, under the influence of the solutions, acquire twenty or thirty times their natural size, so that the liquid becomes a colourless transparent mass. The commercial iodide is easily purified by saturating the potash with hydriodic acid, and by separating the excess of iodine by sulphuretted hydrogen, boiling, rest, and filtration. A solution of a salt so purified remains colourless in a stoppered bottle after exposure to both diffuse and direct sunlight. In a slightly alkaline solution of the iodide, carbonic acid sets some iodine at liberty; atmospheric air produces the

same effect, no doubt because of the carbonic acid present. M. Payen has also shown that the alternate coloration and decoloration of iodide of starch by heat and cooling is occasioned by the dispersion of the amylaceous particles, the colour returning when the groups of particles contract on cooling. (*Comptes Rendus*, Sept. 18, 1865; *Chem. News*, Sept. 1865.)

Commercial Iodide of Potassium. (Huskiisson.)

Mr. W. Huskiisson, jun., makes some practical remarks on the impurities present in Commercial Iodide of Potassium. He thinks these may be regarded as accidental and almost unavoidable. Cubic iodide nearly always contains free alkali, and therefore, however perfectly the salt be dried in the first instance, this trace of alkali again attracts moisture. Iodide containing iodate is generally of foreign origin. (*Pharm. Journ.* July, 1865.)

Purity of Commercial Bromides and Iodides other than Iodide of Potassium. (Matthews.)

Nineteen samples of bromides and iodides were examined by Mr. H. Matthews, consisting of seven samples of bromide of potassium and three each of the bromides and iodides of ammonium and cadmium. The results of the analyses are given in the tables annexed to the Proceedings of the British Pharmaceutical Conference. The results to be deduced from the analysis are, that the bromides of ammonium and cadmium and iodide of cadmium are practically pure; the same cannot be said of the bromide of potassium; and with regard to the iodide of ammonium, the principal impurity is the large quantity of sulphate found in two of the samples, and the presence of which in such quantities is somewhat difficult to account for. (*Proc. Pharm. Conf.*, *Pharm. Journ.* Oct. 1865.)

Hydrate of Carbonate of Lime. (Pelouze.)

The author shows that carbonate of lime, formed and dried at the temperature of 0° C., contains 6 atoms of water. The

salt slowly effloresces at ordinary temperatures, and completely parts with its water at 30° C. (*Journ. de Pharm.* April, 1865, p. 278.)

Spontaneous Oxidation of Amorphous (Red) Phosphorus.
(Groves.)

It is stated in class books on chemistry, that "amorphous phosphorus has no tendency to combine with the oxygen of the air."

Mr. Groves having kept amorphous phosphorus in a bottle which had become accidentally fractured, after the lapse of a year or more he observed it to be getting damp, and on afterwards proceeding to take some from the bottle he found it covered with a layer, a third of an inch thick, of dense acid. The acid was washed from the unaltered phosphorus and examined. It consisted of phosphoric and phosphorous acids, in the proportion of 5 eq. of the former to 2 eq. of the latter, and the quantity was such as would result from the oxidation of more than eleven drachms of phosphorus, about a sixth of the whole contents of the bottle. (*Pharm. Journ.* vol. vi. p. 643.)

Black Phosphorus. (Blondlot.)

M. Blondlot states that the production of Black Phosphorus depends on two things,—the state of purity to which Phosphorus is brought by distillation, and the temperature to which it is afterwards submitted.

Phosphorus which has been exposed to the sun is carefully distilled and collected in a flask, which is slowly cooled in a water bath. The product forms a transparent white mass at ordinary temperatures, but if cooled down to 5° or 6° C. it suddenly turns to a beautiful black colour. It can be redistilled or fused; it is colourless while liquid, but becomes black on again cooling to near zero. M. Blondlot regards black as the proper colour of phosphorus. (*Comptes Rendus*, April 24, 1865.)

White Phosphorus. (Baudrimont.)

The author shows that White Phosphorus is neither a hydrate nor an allotropic state of ordinary phosphorus, nor does it result from devitrification of transparent phosphorus, but that it is ordinary phosphorus irregularly corroded on the surface by the action of the air dissolved in the water,—a slow combustion, which is accelerated by the action of light, and which ceases as soon as the water holds no more oxygen in solution. (*Comptes Rendus*, Nov. 13, 1865.)

**Strength of Solutions of Phosphoric Acid of Various
Densities. (Watts.)**

Mr. J. Watts gives a valuable table, showing the percentage strength of solutions of Phosphoric Acid, by their specific gravities. He states:—

In the compilation of a table of this kind, the first thing is to know at what specific gravity to start; accordingly, finding that a thick syrupy acid of 1·5 sp. gr. contained nearly 50 per cent. real PO_5 , I made that the starting-point, and proceeded regularly downwards as far as sp. gr. 1·006. The interval between these two numbers contains 47 sp. gravities, therefore 49 in all, and as each sp. gr. was analysed at least three times, in order to obtain a correct mean, it entailed the work of about 150 analyses. The table, when completed, stands as follows:—

Specific Gravity.	Per-centage.	Specific Gravity.	Per-centage.	Specific Gravity.	Per-centage.	Specific Gravity.	Per-centage.	Specific Gravity.	Per-centage.
1·508	49·60	1·392	40·86	1·293	32·71	1·185	22·07	1·081	10·44
1·492	48·41	1·384	40·12	1·285	31·94	1·173	20·91	1·073	9·53
1·476	47·10	1·376	39·66	1·276	31·03	1·162	19·73	1·066	8·62
1·464	45·63	1·369	39·21	1·268	30·13	1·153	18·81	1·056	7·39
1·453	45·38	1·356	38·00	1·257	29·16	1·144	17·89	1·047	6·17
1·442	44·13	1·347	37·37	1·247	28·24	1·136	16·95	1·031	4·15
1·434	43·95	1·339	36·74	1·236	27·30	1·124	15·64	1·022	3·03
1·426	43·28	1·328	36·15	1·226	26·36	1·113	14·33	1·014	1·91
1·418	42·61	1·315	34·82	1·211	24·79	1·109	13·25	1·006	·79
1·401	41·60	1·302	33·49	1·197	23·23	1·095	12·18		

Mr. Watts then proceeds to give the various analytical methods he adopted. (Proc. Pharm. Conf., Pharm. Journ. Oct. 1865.)

Phosphate of Ammonia, B.P. (Watts.)

Some doubts having been expressed as to the correctness of the chemical formula given in the Pharmacopœia for this salt, Mr. J. Watts undertook the investigation of the subject. The British Pharmacopœia represents the Phosphate of Ammonia produced by the process given to have the composition $3\text{NH}_4\text{O}, \text{PO}_5, 5\text{HO}$, but chemical works represent that this salt cannot be dried without losing one atom of ammonia. The results obtained by Mr. Watts showed that the formula given by the Pharmacopœia is correct. The salt, however, cannot be kept for any length of time, is very wasteful to prepare, and is consequently unlikely to become an article of commerce. There appears to be no good reason for preferring it to the ordinary diphosphate of ammonia. (Pharm. Journ. April, 1865.)

Phosphate of Soda. (Rammelsberg.)

On evaporating down soda ley for the preparation of caustic soda, small red and yellow crystals have been observed to form before the carbonate of soda crystallizes out. These the author shows to be tribasic phosphate of soda, $3\text{NaO}, \text{PO}_5 + 20\text{aq.}$, coloured by vanadium. (Chem. Centralblatt, no. 12, 1865; Chem. News, vol. xi. p. 179.)

Production of Soft Sulphur. (M. Moutier.)

M. Moutier has shown that sulphur heated with $\frac{1}{400}$ th of its weight of iodine becomes, by cooling, soft, plastic, and in great part insoluble in sulphide of carbon. He also shows that several organic substances, such as naphthaline, paraffine, creasote, camphor, and turpentine, modify sulphur in the same manner, when employed in about the same proportions. The temperature to which the sulphur must be heated, varies with the nature

of the substances added; thus camphor effects a change at a temperature of 230°C. , while naphthaline and turpentine require a much greater heat. The author was led to believe that it was the carbon in these substances which was influential, and he therefore made experiments with that body. He found that one part of carbon with 1000 parts of sulphur, at a temperature 270°C. , effected the same modification. (*Journ. de Pharm.* April, 1865, p. 288.)

Bisulphate of Potash. (Proctor.)

Mr. Barnard S. Proctor states, that a sample of "bisulphate of potash," obtained from a well-known firm of manufacturing chemists, on examination proved to be sulphate, with only a trace of quasi-free acid. The manufacturers, when written to, said they had supplied that article for some years as bisulphate, it being the salt generally known under that name, but at the same time offered to make a true bisulphate if required.

Below are given the results of examination of the first sample, A; the sample made to order, B; and two others obtained from retail sources, several applications for the article proving that it is not generally kept by pharmacutists:—

A gave 0.4 per cent. of quasi-free acid.			
B	„	30.0	„ „
C	„	31.0	„ „
D	„	31.0	„ „
Theory requires		29.5	„ „

(*Proc. Pharm. Conf., Pharm. Journ.* Oct. 1865.)

Source of the so-called Volcanic Ammonia. (W. D. Howard.)

Mr. W. D. Howard states that the so-called Volcanic Ammonia is derived from the crude boracic acid got from the lagoons of Tuscany. This acid always comes into commerce containing from 13 to 20 per cent. of saline impurities. These consist chiefly of various double salts of ammonia, notably the

sulphate of magnesia and ammonia. The ammonia so present is separated and collected when the soda-ash is added to the rough acid in the preparation of borax. Mr. Howard gives some valuable analyses of the crude acid imported in different years. (Proc. Pharm. Conf., Pharm. Journ. Oct. 1865.)

Nitrite of Soda. (W. D. Howard.)

Mr. Howard gives a tolerably ready method for purifying the rough nitrite of soda from much of the undecomposed nitrate which in practice it always retains. This method consists in taking advantage of the slight difference in solubility between the two salts which is sufficient to enable the nitrate to be in great measure removed before the nitrite begins to crystallize out. A sample of rough nitrite, treated in this way, which originally contained 18·9 per cent. of nitrite of soda, was purified till it yielded 40·3 per cent. As the crude nitrite invariably contains either carbonate of soda, caustic soda, or a mixture of both, this method will not alone enable a perfectly pure product to be prepared. (Proc. Pharm. Conf., Pharm. Journ. Oct. 1865.)

Estimation of Nitrite of Soda. (Miller.)

Mr. J. T. Miller recommends the use of a standard solution of permanganate of potash for this purpose. A dilute solution of the nitrite is to be dropped into the permanganate, to which some sulphuric acid has been added, until the colour is destroyed. (Pharm. Journ. Sept. 1865, p. 95.)

Estimation of Nitrites in the Presence of Nitrates.

(Tichborne.)

M. C. R. C. Tichborne, Chemist to the Apothecaries' Hall of Ireland, has examined the different processes which have been suggested for the estimation of Nitrites, but he finds them all faulty. He then gives two new processes, which, he says, are more accurate. The first process is based upon the reduction of chromic acid to chromic oxide by nitrous acid. The reaction is

effected at a low temperature. The second process is based upon the first, that both nitrites and nitrates of the alkalies are converted into chloride upon ignition with chloride of ammonium. Pure nitrite of sodium gives 84.78 per cent. of chloride of sodium, whilst nitrate of sodium only gives 68.82. From these data, it is therefore easy to calculate the percentage, as anything under 84.78 indicates the presence of nitrate. (Proc. Pharm. Conf., Pharm. Journ. Oct. 1865.)

Properties of a Mixture of Nitric and Sulphuric Acids.
(Dietzenbacher.)

A mixture of monohydrated nitric acid and Nordhausen sulphuric acid constitutes a most energetic oxidizing agent. In the cold, it instantly oxidizes roll sulphur, sets fire to charcoal, soot, and phosphorus, ordinary or red, and converts, in a few minutes, arsenic into arsenious acid. On boiling the mixture in a retort, it gives off oxygen abundantly. In the cold, the mixture has, however, no action upon some of the most oxidizable metals. (Comptes Rendus, May 15, 1865.)

Japanese Matches. (Clarke.)

Mr. R. Trevor Clarke has written to the 'Chemical News,' stating that the Japanese Matches are identical with the spur fire of the Chinese. He gives the following form for making this beautiful little firework:—Lampblack 5, sulphur 11, gunpowder from 26 to 30 parts, this last proportion varying with the quality of the powder. Grind very fine, and make the material into a paste with alcohol; form it into dice, with a knife or spatula, about a quarter of an inch square; let them dry rather gradually on a warm mantelpiece, not too near a fire. When dry, fix one of the little squares in a small cleft made at the end of a lavender stalk, or, what is better, the solid straw-like material of which housemaids' carpet-brooms are made (panicular stems of *Arundo Donax*). Light the material at a candle, hold the stem downwards, and await the result. After

the first blazing off, a ball of molten lava will form, from which the curious coruscations will soon appear. (Chem. News, vol. xi.)

Revivification of Animal Charcoal. (Beanes and Medlock.)

It is well known to the sugar refiner, that his animal charcoal soon loses the power of decolorizing his syrups. This is in consequence of the pores of the coal becoming choked up with lime, its power of decolorizing becoming less as the quantity of lime increases. Various modes have been adopted with a view to restoring the decolorizing properties of the charcoal, but practically they have been useless. Mr. E. Beanes has recently patented a process of restoring to charcoal its primitive properties of decolorizing syrups. He finds that charcoal, perfectly dry and hot, absorbs dry hydrochloric gas with the greatest avidity and in enormous quantity. The gas combines with the lime, and converts it into soluble chloride of calcium. After the charcoal has been treated with gas, a portion of untreated charcoal is mixed up with it; the uncombined gas remaining in the pores of the former is taken up by the latter, and the whole becomes neutral; the chloride of calcium is then washed out, and the charcoal is afterwards reburned in the usual way. It is then found that the decolorizing power of the charcoal is augmented at least 100 per cent.

Dr. Medlock describes the advantages of Mr. Beanes's process to be:—

1st. That it removes the whole of the lime and carbonate of lime from the pores, without attacking the phosphate.

2nd. It augments the decolorizing powers of the coal upwards of 100 per cent.

3rd. It requires no expensive apparatus, and the process is almost costless, two saleable products being obtained, nearly equal in value to the materials employed. (Chem. News, xi. 76.)

Preparation of Chlorine. (Shank.)

The binocide of manganese, used in making Chlorine, is replaced with chromate of lime, obtained economically by calcining

chromate of iron (ore) with lime in a current of air. On the addition of hydrochloric acid, the greater part of the chlorine is disengaged without applying heat. The residue treated with water, and the solution by milk of lime, gives a mixture of oxide of chromium and lime, which is available for the chrome manufacturers. (Amer. Journ. Pharm. July, 1865.)

Liquefied Hydrochloric Acid Gas. (Gore.)

In a long paper read before the Royal Society, Mr. Gore gives the following summary :—Out of 86 solids, liquefied hydrochloric acid gas only dissolved 12, and some of those only in a minute degree; of 5 non-metallic substances it dissolved 1, viz. iodine; of 15 metals it dissolved only 1, viz. aluminium; of 22 oxides it dissolved 5, viz. titanous acid, arsenious acid, arsenic acid, tetroxide of antimony, and oxide of zinc; of 9 carbonates it dissolved none; of 8 sulphides it dissolved 1, viz. tersulphide of antimony; of 7 chlorides it dissolved 2, viz. pentachloride of phosphorus and protochloride of tin; and of 7 organic bodies it dissolved 2. The results show also that liquid hydrochloric acid in the anhydrous state manifests much less chemical action upon solid bodies than the same acid mixed with water, as under ordinary circumstances. (Abstract of Proceedings of the Royal Society.)

Purification of Commercial Arsenical Hydrochloric Acid. (Houzeau.)

The author adopts the following process in preparing a strong fuming acid free from arsenic. The apparatus required is a flat-bottomed vessel of six litres capacity, into which three litres of arseniferous acid are to be poured, and 0.3 grm. of powdered chlorate of potash (0.1 grm. per litre) added. To the mouth of the flask a cork, pierced with two holes, is adapted; into one of the holes a straight and strong safety-tube fits, and through the other passes a larger one, long and straight. This long tube is a little tapered at its lower part, and is filled with filings of red

copper (about 100 grms.) packed tightly in to within 0·07 m. of its upper orifice, and then filled almost entirely with asbestos or broken glass. This tube is passed through the neck of the flask close down to the surface of the liquid, so that as much as possible of its length may be heated by the hydrochloric vapour; to the upper part of the elongated tube is then affixed another tube to carry the gas into a receiver. In traversing the column of copper the acid gas is deprived of its chlorine, and arrives in a pure state in the water destined to dissolve it.

By boiling the acid the transformation of the chloride of arsenic into fixed arsenic acid is effected by the decomposition of the chlorate of potash; the excess of chlorine is taken with the moist hydrochloric gas through the copper, which most readily absorbs it, in preference to the acid, for which its affinity is much less. The chloride of copper returns to the flask in the form of a solution, while the gaseous hydrochloric acid condenses in the distilled water. It is important that there should always be in the boiling acid a slight excess of chlorine, to prevent the reduction of the arsenic acid; a constant stream of hydrochloric acid, to each litre of which 1 gramme of chlorate of potash has been added, should therefore arrive through the safety tube (which should not dip more than from three to five centimetres into the liquid), so as always to maintain a small excess of chlorine, and, at the same time, to replenish the flask with hydrochloric acid to be purified. Generally the proportion of liquid acid thus added should be greater than is required for distillation, otherwise there might be an insufficiency of chlorine.

When the experiment has been successfully performed, the hydrochloric acid contains neither arsenic or chlorine. (*Comptes Rendus*, vol. lix. p. 1025.)

Preparation of Hypochlorite of Soda.

By substituting a solution of bicarbonate of soda for one of carbonate in the preparation of the above salt, a precipitate of carbonate of lime is obtained in the form of a crystalline powder,

depositing itself very easily, whilst, when a solution of ordinary carbonate of soda is employed, a kind of magma forms, which it is difficult to separate from the liquid by decantation. A small excess of bicarbonate of soda in the liquid is, as has been proved by experiment, very advantageous in some respects. With Hypochlorite of Soda thus prepared, scarcely a minute is required to bleach any kind of engraving or printing without in the least damaging the paper, especially if it be immediately afterwards plunged for a few seconds in water in which a little acid sulphate of soda has been dissolved. (*Journ. de Pharm. et de Chimie*, vol. i. p. 143, 1865; *Chem. News*, vol. xi. p. 132.)

Detection of Chlorine, Bromine, and Iodine by Spectrum Analysis. (A. Mitscherlich.)

The difficulty of recognizing small amounts of Chlorine, Bromine, and Iodine in a mixture of haloid salts is well known; and it is found impossible to detect mere traces of these bodies in such mixtures by any hitherto known method. The author, however, by using the haloid salts of copper for the purpose, has succeeded in recognizing the smallest amounts of the above substances by the use of the spectrum apparatus.

By this method, and without further trouble, $\frac{1}{4}$ per cent. of chlorine, $\frac{1}{3}$ per cent. of bromine, and 1 per cent. of iodine are easily recognized, and a practised eye may detect smaller quantities. (*Poggendorff's Annalen*, no. 8, 1865, p. 629; *Chem. News*, Nov. 24, 1865.)

Production of Fluorine. (Kaemmerer.)

A completely dry tube contains at one end some dry iodine, and next to it a thin sealed glass tube, containing fluoride of silver. The iodine is first heated, to expel atmospheric air; the large tube is then sealed, and shaken, to break the inner tube, containing the fluoride. The whole is then kept for twenty-four hours at a temperature of from 158° to 176° F. The iodine has disappeared, and the tube contains a colourless gas, which

has not attacked the glass, and which, when treated over mercury with potash, produces fluoride of potassium and peroxide of hydrogen. (Wittstein's Vierteljahr. für Pharm. xiv. 279.)

Aqueous Solutions of Perchloride of Iron, such as Liquor Ferri Perchloridi, B.P. (Attfield.)

Dr. Attfield states:—There are four ways of making an aqueous solution of perchloride of iron, but only one of these gives it in a pure state. To obtain it absolutely pure, the solid anhydrous perchloride—made directly from its elements, chlorine and iron—is simply dissolved in distilled water. This is the method analytical chemists adopt. The practical results of the other methods is to give a solution of perchloride of iron, containing either peroxide of iron or hydrochloric acid. The first of these three faulty processes is that of saturating aqueous hydrochloric acid by iron, and then passing chlorine through the solution till the protochloride of iron is converted into perchloride. The result is a liquid loaded with free chlorine. It is true the chlorine can be removed by ebullition, but simultaneously the perchloride of iron and water react, hydrochloric acid is produced and lost, and peroxide of iron remains to contaminate what remains of the perchloride. The second of the faulty methods is to dissolve peroxide of iron in aqueous hydrochloric acid; it fails because pure soluble peroxide of iron, in a definite state of hydration, is not met with in commerce. And the remaining faulty process is to saturate two-thirds of a given volume of hydrochloric acid by iron, and then remove the hydrogen of the other third by nitric acid. This fails, because heat is necessary to complete the reaction; and with heat decomposition of the perchloride of iron and loss of hydrochloric acid to an unknown extent occurs.* These three faulty methods are those commonly adopted by manufacturing chemists.

* This is the British Pharmacopœia process, but is badly described in that work: operators must use rather less nitric acid, and 10 to 20 per cent. more hydrochloric acid than there ordered, even if the stability of the preparation is the only object desired.

The experiments on which most of these statements concerning perchloride of iron are founded, are detailed in the 'Pharmaceutical Journal' of February, 1865 (second series, vol. vi. p. 396). (Proc. Pharm. Conf., Pharm. Journ. Oct. 1865.)

Tinctura Ferri Perchloridi, B.P. (Attfield.)

Dr. Attfield thus writes:—Why is a spirituous solution of perchloride of iron used in medicine at all? Why are spirituous solutions of any kind used? The answer to this second question is, that, firstly, some substances are only soluble in spirit, or better dissolved by spirit than by water; and, secondly, that spirituous solutions (tinctures) of many vegetable substances can be kept without spoiling for a far longer period than aqueous ones. But perchloride of iron is more readily soluble in water than in spirit; and spirit, so far from preserving perchloride of iron, decomposes it with precipitation of a basic chloride of iron,—in fact, in common language, spoils it. Tincture of perchloride of iron will not keep at all unless it is acid, and not then, for any length of time. Why, then, is it ordered in the British Pharmacopœia? Because there is a demand for it by medical men. And why do medical men use it? Because their fathers used it before them, and because they do not know that an aqueous solution is as good and better.

The above remarks are partly in abstract of a paper already published in the 'Pharmaceutical Journal' of February, 1865 (2nd series, vol. vi. p. 396). (Proc. Pharm. Conf., Pharm. Journ. Oct. 1865.)

Preparation of Liq. Ferri Perchlor. B. P. (Jardine.)

The author criticizes the formula and directions of the British Pharmacopœia. He considers that the solution of iron should be filtered. He thinks, that the fact of the sudden boiling up of the solution with an evolution of binoxide of nitrogen, should have been adverted to, as the withdrawal of heat at this moment

is often the cause of failure in the preparation. Mr. Jardine believes, that for a product that will keep well, of constant strength, and elegant appearance, the B. P. formula is an efficient one. (Pharm. Journ. vol. vi. p. 549.)

New Method of Preparing Oxygen. (Heitmann.)

Take a strong solution of chloride of lime, and gently heat it with only a trace of freshly-prepared peroxide of cobalt; a stream of Oxygen is evolved, and chloride of calcium is formed. The evolution of the gas is very regular, when the liquid is heated to 70° or 80°. All the oxygen is given off, no chlorine being liberated. The chief point is to use a perfectly clear solution of chloride of lime; if a milky or thick solution be used, it will froth.

The author states the advantages of this method as follows:—

1. The evolution proceeds with extraordinary regularity, and the gas is collected with the greatest ease, which makes the process specially applicable as a lecture experiment. When the mixture has been heated to 70° or 80°, the lamp may, in general, be removed, as the heat of the fluid is then sufficient to carry on the reaction to the end.

2. The whole of the oxygen is obtained from the material, while only a part is procured by heating peroxide of manganese.

3. The process has the advantage of greater cheapness than that with chlorate of potash, either with or without manganese. (Ann. der Chem. und Pharm. April, 1865; Chem. News, vol. xi. 239, and xi. 255.)

Preparation of Metallic Peroxides. (Böttger.)

The author states that the quickest method of preparing these bodies is by digesting for some time at 100° C. the recently-precipitated hydrated oxides with a solution of hypochlorite of soda containing some free soda. In this way he has prepared peroxides of lead, bismuth, manganese, cobalt, and nickel, as well

as copper. (Journ. f. Prak. Chemie, No. 14, 1865 ; Chem. News, Nov. 3, 1865.)

Alleged Fallacy in Marsh's Test of Arsenic. (Gamble.)

The following conclusions are arrived at by Dr. Arthur Gamble:—1. When the acid used in Marsh's process contains a very small quantity of nitric acid, mirrors of metallic arsenic are obtained from extremely minute quantities of arsenic added to the apparatus; in other words, a trace of nitric acid present in the sulphuric acid in Marsh's process does not perceptibly interfere with the formation of mirrors of metallic arsenic.—2. When the acid used in Marsh's process contains a considerable percentage of nitric acid, the formation of mirrors is checked, the extent to which this occurs depending upon (a) the proportion of nitric acid present in the sulphuric acid (b), the quantity of arsenic present in the apparatus.—3. Under these circumstances, the addition of an organic fluid to the apparatus does not promote the formation of mirrors.—4. When the nitric acid prevents the formation of mirrors of metallic arsenic in Marsh's process, it does not check the evolution of arseniuretted hydrogen, but prevents its being decomposed by heat into arsenic and hydrogen, by causing its oxidation, a ring of crystals of arsenious acid being, under these circumstances, formed inside the tube. (Edinb. Med. Journal, vol. x. p. 414.)

Dialysis applied to Toxicological Investigations. (Revel.)

The following are the results of the author's experiments:—

The presence of fatty matter is in some degree an obstacle to the separation by the septum.

The separation of the colloids and crystalloids is more rapid when there exists a considerable difference of temperature between the two liquids, *i.e.* that of the dialyser and that of the receiver, although the equilibrium is not long in re-establishing itself.

The presence of albuminous substances is a great obstacle, especially in such cases as the salts of copper, mercury, iron, lead, tin, etc. It is necessary in such cases to strongly acidulate with nitric or hydrochloric acid, and then to boil, separate the coagulum, and treat again with acidulated water, mix the two liquids, and submit them to dialysis.

The presence of albumen is of no consequence as regards the detection of the organic alkaloids, arsenious and arsenic acids, and the alkaline cyanides.

The separation of the organic alkaloids from such liquids as milk, urine, blood, bile, broth, etc., takes place very slowly, taking, in some cases, five or ten days.

The presence of the organic alkaloids may be shown in the liquids dialysed by the potassio-mercuric iodide.

Atropine, aconitine, daturine, solanine, and veratrine do not give reactions sufficiently characteristic to prove their presence. (*Comptes Rendus*, t. lx. p. 453, 1865.)

Action of Sodium Amalgam on some Metallic Salts.
(Bunge).

A tolerable strong aqueous solution of ferric chloride, acidulated with hydrochloric acid, when treated with Sodium Amalgam becomes clearer and clearer, and at last colourless, the whole of the iron being reduced. M. Bunge believes that the reduction of ferric to ferrous chloride, and of the latter to metallic iron proceeds simultaneously.

Chromic chloride, mercuric and gold chlorides, and the chloride, iodide, and bromide of silver, are similarly reduced. In the case of the mercuric chloride calomel is first produced. This reaction may be usefully employed in analysis of the haloid compounds of silver, instead of fusing these compounds off with an alkaline carbonate. It is only necessary to place a small quantity of the powder in a test glass with a little water, and add thereto some pieces of sodium amalgam, and the chlorine, iodine, or bromine may be detected in the solution in the ordi-

nary way. (Chem. Centralblatt, no. 13, 1865; Chem. News, vol. xi. p. 225.)

Test for Tartar Emetic. (Claus.)

The author shows that perchloride of iron causes a yellow coloration in a strong solution of tartar emetic, but in a dilute solution occasions a yellow precipitate, which appears to consist of a mixture of basic chlorides of antimony and iron, and some tartar emetic. (Chem. Centralblatt; Chem. News, vol. xi. p. 132.)

Solubility of Salts. (Persoz.)

The following are the laws deduced by Dalton from his experiments on solubilities, and since confirmed by Playfair and Joule:—

1. Anhydrous salts do not increase the volume of water in which they are dissolved.

2. Hydrated salts in dissolving in water increase its volume by an amount exactly equal to the water the salts contain.

From experiments made, M. Persoz comes to conclusions directly opposite to the above. The following are his conclusions:—

1. When an anhydrous or a hydrated salt, which has not the power of fixing water, is dissolved, the volume of the solution is equal to the sum of the volumes of the salt and water brought together.

2. The solution of an *imperfect* salt which fixes water is always attended with condensation, but this condensation never reaches the volume of the salt. (Comptes Rendus, June 26, 1865.)

On the Solubility of Salts in Mixtures of Alcohol and Water. (Gerardin.)

The results obtained by the author are—1. All salts insoluble in alcohol and soluble in water have, in mixtures of alcohol and water at a constant temperature, a solubility decreasing as the

proportion of the water in the mixture is diminished. 2. The solubility of these salts is not proportional to the amount of water contained in the mixture. The quantity dissolved is always less than would dissolve in the same amount of water by itself. (Ann. de Chimie et de Physique, June, 1865.)

Ferrum redactum. (Oberländer.)

The author analysed a sample of reduced iron, and found it to contain only five per cent. of metallic iron, the rest being protoxide with sulphide. He surmises it to have been the wasted residue from the preparation of cyanide of potassium according to Liebig's process. (Wittstein's Vierteljahr. für Pharm. 586. xiv.)

Detection of Methylic Alcohol in Presence of Ethylic Alcohol and Volatile Oil. (Miller.)

Mr. J. T. Miller gives the following excellent test for Methylated Spirit:—

The method which, after an extended trial, I have found to give good results, and to be capable of very general application, is based on the difference of the products of the oxidation, under certain conditions, of ethylic and methylic alcohol: the former yielding principally water, aldehyde, and acetic acid, with only traces of formic acid; the latter giving, together with other products, formic acid in *comparatively* large quantity. The following experiments demonstrate this:—

Put into a small distilling apparatus 60 grains of powdered bichromate of potash, and pour upon it 1 ounce of water and 90 grains of sulphuric acid, sp. gr. 1·845, then add 1 fluid drachm of rectified spirit. Let the mixture stand fifteen minutes, and distil 1 fluid ounce. Neutralize the distillate with carbonate of soda, boil it down nearly to dryness, add water to make up the quantity 4 fluid drachms, and render the solution sufficiently acid to redden litmus paper by the addition of a drop or so of acetic acid, then pour it in equal portions into two perfectly clean one-ounce test-tubes. To one portion add 1 grain of

nitrate of silver dissolved in half a fluid drachm of water, heat to boiling, and boil *gently* for about two minutes. The mixture darkens slightly, but does not lose its transparency; and if the tube is filled with water and set aside, a *minute* dark precipitate slowly subsides, leaving the glass clear and free from brown deposit. To the other portion of the solution half a fluid drachm of acetic acid, and a few drops of solution of nitrate of suboxide of mercury, are to be added. Upon boiling briskly for a few minutes, a *small* grey precipitate of metallic mercury subsides.

If these experiments are repeated, using pure methylic alcohol in place of rectified spirit, very different results are obtained. The portion of the prepared distillate treated with nitrate of silver quickly becomes turbid and opaque when treated, and upon boiling *a coating of silver sufficiently thick to form a mirror is deposited on the inner surface of the tube*. If the liquor is transferred to a clean tube and again boiled with another grain of nitrate of silver, a part of this is also decomposed; and on adding water a *considerable* precipitate of silver subsides, and a thin film of the metal, which appears *brown* by transmitted light, is found upon the glass. Upon boiling the second half of the distillate, after adding acetic acid and solution of subnitrate of mercury, fresh portions of the latter being supplied as long as it is quickly decomposed, an *abundant* precipitate of metallic mercury separates.

In mixtures of ethylic and methylic alcohol the detection of the latter by this process is easy and certain, for when it forms only from 1 to 2 per cent. of the whole, the distillate, upon treating with nitrate of silver, darkens to opacity, and distinctly *browns* the tube. Of course the spirit to be tested must be free from non-volatile organic substances; but the presence of essential oil in small quantity is of no moment. Consequently, in applying the method to the examination of tinctures, etc., a preliminary distillation is often necessary. This, however, is a trifling matter. (Pharm. Journ. p. 534.)

Mr. H. N. Draper has since published some experiments thoroughly establishing the practical value of Mr. Miller's process.

He examined a number of compound spirits, tinctures, etc. by it, and found the results perfectly trustworthy. He only found it doubtful in the case of *spirits of nitre*. He adds:—When I have next to examine spirit of nitre I shall distil the specimens from caustic soda or potash before oxidizing them. Beyond this I would make no alteration in the *modus operandi* of Mr. Miller, nor can I suggest any improvement upon it. (Pharm. Journ. June, 1865.)

Mr. Tuck also confirms the value of Mr. Miller's test, in a paper read before the Pharmaceutical Conference. (Pharm. Journ. Oct. 1865.)

Detection of Methylic Alcohol. (Miller.)

Mr. Miller has more recently given the following modification of his process for the detection of Methylic Alcohol when it is wished to avoid distillation. It is easy of execution, and gives very fair results.

Prepare in a small flask an oxidizing solution with 20 grains of bichromate of potash, 3 fluid drachms of water, and 20 minims of strong sulphuric acid, and add to it 30 minims of the spirit to be tested. After the mixture has stood ten minutes, add just enough milk of lime to give it an alkaline reaction; warm, filter, and wash with half an ounce of warm water. The filtrate will be free from chromic oxide, and the greater part of the sulphuric acid. Precipitate the remainder of the latter, and any chromic acid which may be present, by the addition in small excess of a strong solution of acetate of lead; warm slightly, allow a few moments for the precipitate to subside, and filter. The filtrate should now be clear, colourless, and nearly neutral to test-paper. Boil it quickly down to 2 fluid drachms, pour it into an ounce test-tube, add 1 drop of dilute acetic acid (1 part of the B. P. acid to 2 parts water), and 1 grain of nitrate of silver in 30 minims of water; then heat the liquor slowly to the boiling-point, and *simmer* two or three minutes. Darkening of the solution to a considerable degree may occur, even though the spirit be free from Methylic Alcohol, and is therefore a less

reliable indication of the presence of that substance than when the oxidation products have been separated by distillation. The state of the test-tube will, however, decide the question. It should be rinsed out, filled with water, and placed against white paper. If it appear clean and uncoloured, the spirit is either pure, or contains less than 2 per cent. of Methylic Alcohol; if, on the other hand, the lower part of the tube have an evident brown tint, the spirit is methylated.

To obtain satisfactory results by this process, the points to be minded are:—1. To use distilled water. 2. To add only a slight excess of the precipitants. 3. To use a perfectly clean test-tube. 4. To avoid boiling the liquor up the tube, and so thinning the metallic deposit by spreading it over a larger surface.

Mr. Miller has tried various oxidizing agents, but has found none better or more manageable than bichromate of potash. (Pharm. Journ. Dec. 1865.)

Detection of Methylic Alcohol or Ether. (Young.)

Mr. W. Young suggests the size of a solution of permanganate of potash as a test for methyl compounds. He finds that pure spirit or ether does not act on the permanganate for 10 or 12 minutes, but that methylated spirit or ether decomposes it very rapidly. (Pharm. Journ. Nov. 1865, p. 278.)

Means of Detecting whether Chloroform, Ether, Spirit of Nitre, and Sal Volatile have been made from Methylated Spirit. (Tuck.)

Mr. J. Tuck read a paper on this subject at the last meeting of the Pharmaceutical Conference.

He states that Chloroform can be, and is, prepared from Methylated Spirit as good as, and the same in chemical composition as, that from pure alcohol. Consequently there can be no test to distinguish between them, there being no difference in them.

Methylated Ether, he states, may be detected by its boiling-point. Ether made from Methylated Spirit boils from 14° to 17° F. lower than Ether from pure alcohol.

The presence of methylic alcohol in Spirit of Nitre may be proved by mixing the spirit with an equal bulk of a strong solution of caustic potash, allowing the mixture to stand for an hour, then distilling off one-half, and testing the distilled Ether by Mr. Miller's test, or by the iodohydrargyride of potassium.

Sal Volatile should be tested by diluting it with an equal bulk of water, neutralizing it with dilute sulphuric acid, and then distilling and testing as in the last case. (Pharm. Journ. Oct. 1865.)

Eschwege's Patent Wood Naphtha. (Tuck.)

In a paper published in the 'Pharmaceutical Journal' for January, 1863, Mr. J. Tuck drew the attention of pharmacutists to what was at that time a new and remarkable spirit patented in this country, and known as "Patent Pure Wood Spirit," or "Patent Pure Wood Naphtha," samples of which were shown at the late International Exhibition.

Mr. Tuck now states:—This spirit was as odourless as ordinary spirit of wine, and as free from any disagreeable taste. It was, in fact, so totally unlike the ordinary wood-spirit or naphtha of commerce, that I felt it to be my duty to ascertain positively that it was one of the many products of the destructive distillation of wood, before making any extended trials of its solvent powers on various bodies. I should, perhaps, here state that naphtha or wood spirit can, when not mixed with fermented spirit, be readily detected by means of oxalic acid, the naphtha being converted into crystals of the oxalate of oxide of methyl, solid at all ordinary temperatures, whilst fermented spirit is by the same treatment only converted into a liquid, heavier than and a little soluble in water. On submitting this new spirit to the action of oxalic acid, the formation of these crystals of methyl-oxalic ether, thoroughly proved it to be wood spirit with which I had to deal.

This patent wood naphtha is obtained from the commercial article by largely diluting it with water, filtering the diluted spirit through large cylinders of granulated charcoal, and then distilling, some portions of the first and last runnings being

rejected. It is finally rectified, and sent into commerce as a nearly absolute spirit.

Since the publication of my former paper, I have made many trials on a larger scale of the pure wood spirit, and find its solvent powers to be remarkably similar to fermented spirit, so that it will become of very great importance in those arts and manufactures requiring spirituous menstruums, free from any disagreeable smell, and capable of dissolving the gums, resins, oils, alkaloids, etc. etc., used in their various processes.

It is in meeting these hitherto unsupplied requirements of perfumery, varnish-making, etc. etc. (none of which were benefited in the least by methylated spirit), that the patent wood naphtha has become of so much importance, all the essential oils, odorous substances, resins, gums, etc., being as soluble in it, and in some cases even more so than in spirit of wine. In my former paper I gave a list of more than twenty essential oils I had dissolved in it; since that time I have tried its solvent action on many other essential oils and substances used in perfumery, and the general conclusion I have come to concerning it is, that it is a most valuable menstruum, and one well worthy the attention of perfumers and others requiring a spirit for its solvent action.

For making transparent soaps, as far as my experiments permit me to give an opinion, it will be found to answer in every respect as well as fermented spirit,—curd, Castile, and other soaps being just as soluble in it. It will be in the recollection of some here present, that a few years ago ordinary wood-naphtha was given and recommended extensively in the treatment of phthisis, and now that it can be obtained free from odour and disagreeable taste, its medicinal action upon the system would form a very interesting inquiry. In cases of painful inflammation, headache, etc. etc., the “Patent Wood-spirit” makes a far better evaporating lotion than spirit of wine in the same proportions, on account of its greater volatility, its boiling-point being much lower. To the naturalist it affords a new and valuable agent for the preservation of his animal and vege-

table specimens, being free from the faults that attend the ordinary naphtha. It also promises to be of the highest importance in photography; from some experiments detailed lately in one of the photographic journals, gun-cotton is more soluble in it than in sulphuric ether, and I have seen a good picture taken upon collodion so prepared. The patent wood-naphtha collodion will prove a great boon to photographers in India and warm climates where the ordinary collodion frequently boils as it is poured on the plate. (Proc. Pharm. Conf., Pharm. Journ. Oct. 1865.)

Preparation of Pure Chloroform. (Adrian.)

Chloroform, as sold, contains many impurities, which render it less efficacious than when pure. Many of these impurities resemble chloroform so closely as only to be recognised by a careful examination. M. Adrian proposes the following processes for the purpose of preparing a perfectly pure anæsthetic. It should first be shaken with water, to remove the alcohol; these washings being repeated several times, the complete absence of alcohol being proved by chromic acid and recently prepared binitrosulphide of iron, the former of which is not decomposed, and the latter remains insoluble when the chloroform is quite free from alcohol. The water also removes any aldehyde which may be present. When the chlorine and its derivatives have been for the most part removed by the previous processes, the chloroform is put in contact with a weak solution of carbonate of soda, which saturates the last traces of chlorine, as well as the hydrochloric and hypochlorous acids which may remain in solution. The water retained in solution by the chloroform is removed by digestion, for twenty-four or forty-eight hours, with chloride of calcium; and a considerable quantity of this salt must be used, and the process repeated at several intervals. After this purification the density and the boiling-point of the chloroform should be accurately determined. If the point of ebullition exceeds the 61st degree, and rises to the 68th degree C., the chloroform must be subjected to another series of rectifications. (Bull. Gén. de Thérap.; Med. Press, Feb. 1, 1865.)

B. P. Tests for Chloroform. (Brown.)

Mr. D. R. Brown criticizes the tests for the purity of Chloroform given in the British Pharmacopœia. He refers especially to the potassium test, which he condemns. He contends that pure Chloroform *does* evolve gas when treated with potassium, (Pharm. Journ. May, 1865.)

Ether of Commerce. (Regnault and Adrian.)

MM. Regnault and Adrian have published a very comprehensive memoir on the Manufacture, Rectification, Composition, and Assay of Sulphuric Ether. The first part of this paper (published in the Journ. de Pharm. March, 1864) contained a description of an easy method of testing ether, and determining the relative proportions of alcohol and water present in it. The second part contains (Journ. de Pharm. Feb. 1865) a series of tables on the Densities of Ethereal Mixtures, and also some considerations on the Purification and Rectification of Ether.

Nitrate of Oxide of Ethyl. (Wittstein and Sticht.)

The authors obtained the above by saturating strong nitric acid, contained in a Wolff's bottle, with gaseous ammonia containing alcoholic vapour. (Wittstein's Vierteljahr. für Pharm. 198, xiv.)

Detection of Alcohol in Small Quantity. (Carstanjin.)

The liquid to be tested is mixed with a portion of platinum-black in a small flask, heated to 124° F., agitated well, and filtered. A few drops of liq. potassæ are added to the filtrate, which is evaporated to dryness over a water-bath. The residue is then mixed with a little arsenious acid, and submitted to heat. If alcohol is present, cacodyl is produced, recognizable by its garlic odour. It is suggested by M. Nickles, that propylic alcohol will also yield cacodylic products by this process. (Journ. de Pharm. July, 1865.)

Monohydrated Oxalic Acid. (Reichardt.)

The ordinary acid is dissolved in concentrated sulphuric acid, from which solution, after a short time, the monohydrate crystallizes out. The first crystals which form are the ordinary trihydrate; then a bihydrate separates; and lastly, after a week, small rhombic octahedral crystals of C_2O_2HO deposit. They quickly attract moisture, and must be isolated and dried with great care. (Chem. Centralblatt, no. 8, 1865.)

Processes for the Preparation of Glacial Acetic Acid.
(Heathfield.)

In this paper Mr. W. E. Heathfield describes in detail some of the Pharmacopœial and Manufacturing Processes for making Acetic Acid. (Proc. Pharm. Conf., Pharm. Journ. Oct. 1865.)

Preparation of Ferridcyanide of Ammonium. (Schaller.)

To prepare the salt, the author dissolves 8 kilogrammes of red prussiate of potash and 4.85 kilogrammes of sulphate of ammonia in 10 litres of water; after having raised the water to the boiling-point and continued boiling the mixture for an hour, he allows the solution to cool. Most of the sulphate of potash which has been formed, then deposits, and the mother-liquor contains the ferridcyanide of ammonium. By successive crystallization of the mother-liquor, M. Schaller has obtained about six kilogrammes of the salt crystallized in oblique rhomboidal prisms. As the solution of the salt is impaired by boiling, it is better to evaporate at a gentle heat; 100 parts of water dissolve at the ordinary temperature 55 parts of the salt. M. Schaller has also obtained the same compound by reacting with chloride of lime on Prussian blue, and decomposing the ferridcyanide of calcium produced by sulphate of ammonia. (Rép. de Pharm. and Journ. de Pharm. March, 1862, p. 219.)

Pharaoh's Serpents. (Wood.)

Mr. C. H. Wood has described the toy called Pharaoh's Serpent as follows:—

It consists of a little cone of tinfoil, containing a white powder, about an inch in height and resembling a pastille.

Having a little of the white powder, with which the cones are filled, placed at my disposal by a friend, I submitted it to analysis and found it to consist of sulphocyanide of mercury. This salt, when heated to a temperature below redness, undergoes decomposition, swelling or growing in size in a most remarkable manner, and producing a mixture of *mellon* (a compound of carbon and nitrogen) with a little sulphide of mercury. The resulting mass often assumes a most fantastic shape, and is sufficiently coherent to retain its form; it presents a yellow colour on the exterior, but is black within. The "serpent" shape of course results from the salt being burnt in a cone of tinfoil.

Both the mercurous and mercuric sulphocyanides decompose in the same manner; but the mercuric salt, containing more sulphocyanogen, seems capable of furnishing a larger quantity of mellon, and is the one used in the French serpents. A solution of pernitrate of mercury is readily precipitated by sulphocyanide of ammonium, and the mercuric sulphocyanide may be easily so prepared. It is best to use the mercurial solution as strong as possible, and to *keep it in excess* throughout the precipitation. Solution of perchloride of mercury is not so easily precipitated as the pernitrate, probably owing to the solubility of the mercuric sulphocyanide in the chlorides.

Perhaps I may be excused for adding that sulphocyanide of ammonium, suitable for the above purpose, may be very easily and economically prepared, as follows:—One volume of bisulphide of carbon, four volumes of liq. ammon. fort., and four volumes of methylated spirit are put into a large bottle, and the mixture frequently shaken. In the course of one or two hours the sulphide of carbon will have entirely dissolved in the ammoniacal liquid, forming a deep red solution. When this result

is attained, the liquid is boiled until the red colour disappears and is replaced by light yellow. The solution is then evaporated at a *very gentle heat* (about 80° or 90° F.) until it crystallizes, or just to dryness. The product is sulphocyanide of ammonium, sufficiently pure for the above purpose. One recrystallization from alcohol will render it quite white.

One ounce of bisulphide of carbon yields, by this process, exactly one ounce of sulphocyanide of ammonium. (Pharm. Journ. Oct. 1865.)

Reciprocal Action of Cream of Tartar and Sulphate of Lime.
(Bussy and Buignet.)

It has long been the custom of wine-makers to put gypsum into their wine before or after fermentation. The result of this addition may or may not be pernicious, most probably it is not. MM. Bussy and Buignet, on bringing sulphate of lime into contact with bitartrate of potash, in an alcoholic mixture, found that the results were neutral tartrate of potash, tartrate of lime, and bisulphate of potash. (Comptes Rendus, Jan. 30, 1865.)

Tannin in British Galls. (Judd.)

Mr. Judd first examined a sample of old galls, which had hung on the trees till Christmas, of course perforated by the escape of the fly. They were found to contain an average of 15·97 per cent. of tannin. Secondly, galls gathered when mature (in the month of August), not perforated. These were found to contain 17·65 per cent. of tannin. Thirdly, galls gathered when about half developed and dried, producing a more dense and shrivelled gall. These contained 13·4 per cent. of tannin. It appears from this that the mature galls, gathered before the escape of the fly, contain, as might have been expected, the largest quantity of tannin.

With these data we may turn to the second question, "Can they, at either of these periods, be employed economically as a substitute for the nut-galls of commerce?"

The quantity of tannin contained in Aleppo galls, as stated

by various authors, ranges from 30 to 65 per cent., which is obviously much more than that contained in these British galls; yet, with so considerable a percentage of tannin, there are probably some uses to which they may be advantageously applied. He has not yet been able to make any experiments with a view to ascertain if gallic or tannic acids may be commercially prepared from them. (Proc. Pharm. Conf., Pharm. Journ. Oct. 1865.)

Preparation of Pyrogallic Acid. (De Laynes and Esperandieu.)

The authors, by the application of heat, split up gallic acid into carbonic and pyrogallic acids, and theoretically 100 parts of gallic acid should yield 74.1 of pyrogallic acid. In practice, however, only 25 per cent. is obtained. MM. De Laynes and Esperandieu had recourse to heating gallic acid in a closed vessel. They employed a kind of Pepin's digester, made of bronze, in which they placed gallic acid with two or three times its weight of water. They then applied heat and raised the temperature to 210° C, and kept it at this point for half an hour. The whole operation lasted from an hour and a half to two hours. The result was an almost colourless solution of pyrogallic acid, which, on evaporation, yielded an amber-coloured crystalline mass. The product was rather more than the theoretical amount, in consequence of the retention of a small quantity of water by the pyrogallic acid. (Comptes Rendus, Sept. 18 1865; Chem. News, Sept. 29, 1865.)

Volumetric Method for Assaying Soap. (Pons.)

The author has devised the following ingenious mode of testing the quality of soaps found in commerce. He takes as a type Marseilles soap, which presents a tolerably constant composition. It should contain

Soda	6
Fatty Acids :	64
Water	30

One gramme of this soap is exactly neutralized or decomposed by

0.1074 gramme of chloride of calcium. A solution, therefore, of 1.074 gramme of chloride of calcium in 1000 c. c. of distilled water, will be exactly neutralized by 10 grammes of this soap dissolved in 100 c. c. of alcohol, and diluted with water to the bulk of 1000 c. c. These liquids will in fact be, bulk for bulk, equivalent to each other. Any excess of the soap solution will be shown by the formation of a persistent lather, as in Clark's Soap Test for Waters.

In the practical testing of soaps, a solution of chloride of calcium, of the strength described, is prepared, and 100 c. c. of the same is introduced into a bottle, with 20 c. c. of distilled water. 10 grammes of the soap to be tested are then dissolved in 100 c. c. of alcohol. Any insoluble matter is filtered off, and may be weighed. The alcoholic solution is diluted with distilled water, to the bulk of 1000 c. c.; a graduated turette is then filled with this liquid, which is added drop by drop to the chloride of calcium solution, shaking after each addition. When a persistent froth is obtained, the amount of soap solution is read off. By dividing 10 by this number, a quotient is obtained, which represents the amount of the type soap, equivalent to 100 of the sample tested. (*Journ. de Pharm.*, April, 1865, p. 290.)

Combination of Casein with Acids. (Millon and Commaille.)

The authors publish the results of an investigation on the nature of casein, in which they describe some curious combinations which it forms with acids. They state that casein combines with a large number of mineral and organic acids, forming well-defined compounds, having a definite chemical composition. They have obtained, and describe, the hydrochlorate, chloroplatinate, sulphate, chromate, nitrate, phosphate, arseniate, and oxalate; and they give a formula for each. These combinations are generally insoluble. They are formed by precipitation, but are slightly soluble in excess of the acids.

The authors appear to consider that casein exists in two con-

ditions. (Journ. de Pharm. March, 1865, p. 204, and August, 1865, p. 144.)

Preparation of Thebolactic Acid. (Smith.)

Messrs. T. and H. Smith give the following process:—The ready crystallizability of the salt of lime gives the means of obtaining the thebolactic acid from opium. After all the alkaloids have been thrown down by an alkali from the impure mother-liquors of morphia, the concentrated liquor is digested with levigated litharge, at a heat of about 140° F., with frequent stirring. The thinned and filtered liquid, having been then concentrated to a thick consistency, is mixed up with a large quantity of S. V. R. From the filtered spiritous liquid the bases are carefully thrown down as sulphates by the addition of sulphuric acid (of which, to do this, a large quantity is necessary). The filtered liquid, after careful neutralization with milk of lime, is distilled to recover the spirit. On the contents of the still being then brought to a syrupy consistence, and laid aside for a week or so, the syrup liquid sets into a crystalline mass of thebolactate of lime. This lime-salt is easily purified by repeated crystallization, and the use of charcoal. After bringing the salt to a snowy whiteness, the acid can then, by the addition of the equivalent quantity of sulphuric acid, and the use of S. V. R. or other obvious means, be obtained in a separate state. (Pharm. Journ. vol. vii. p. 50.)

Preparation of Curarine. (Preyer.)

M. Preyer, to prepare this alkaloid, treats the crude poison scraped off arrows, or obtained from the Indians in little clay pots, with boiling alcohol, and distils the alcohol from the solution. The residue is treated with water, and filtered to separate the resin, and the filtrate is precipitated by bichloride of mercury. The precipitate contains all the curarine. It is washed, suspended in water, and decomposed by sulphuretted hydrogen; and thus hydrochlorate of curarine is obtained in solution. The

purification may be effected as usual. The soluble salts are all crystallizable. Curarine has a bitter taste, is soluble in water and alcohol in all proportions, insoluble in ether, benzole, and sulphide of carbon. Pure concentrated sulphuric acid gives to curarine a magnificent and lasting blue colour, which serves to distinguish it from strychnine. (Buchner's.)

Preparation of Physostigmin. (Mayer.)

The author used sixty Calabar beans for the purpose of preparing the alkaloid. He found that the base, as well as its salts, were colourless, and that whenever they became coloured, a loss was sustained. To avoid evaporation as much as possible, he adopted the following method :—

The beans were reduced to moderately fine powder, and repeatedly digested with alcohol, 85 per cent., and then displaced with alcohol of the same strength. The tincture was subjected to distillation, while the residual powder was boiled with dilute sulphuric acid, until all of the starch had disappeared. The residual extract from the tincture and the acid solution were then mixed, filtered, and precipitated with iodohydrargyrate of potassium, the precipitate washed by decantation, transferred to a flask with a good stopper, in which it was treated with a strong solution of protochloride of tin in tartrate and bicarbonate of soda, and then with ether. The colourless ethereal solution was distilled, the soft residue redissolved in dilute sulphuric acid, and again treated with ether and ammonia. The alkaloid was now obtained as an almost colourless mass, readily combining to form crystalline salts, but without any distinctive reactions. On dissolving the impure alkaloid in acids, a reddish-brown substance separates, which, from the experiments made with it, may be assumed to be inert. (Amer. Journ. Pharm. May, 1865.)

Eserine, an Alkaloid of the Calabar Bean. (Vée and Leven.)

The authors believe that the Physostigmine of Jobst and Hesse possesses only some of the characters of an immediate

principle, and is a mixture of several bodies, of which the most considerable is a crystallizable body, which they call *Esérine*.

It is obtained in the following manner, being a modification of Stas's process for separating alkaloids in cases of poisoning :— Calabar beans are reduced to a fine powder, and exhausted by alcohol. The alcohol is carefully distilled from the tincture, and the extract is treated with a strong solution of tartaric acid. After some time, the mixture is diluted with water, filtered, and then supersaturated with bicarbonate of potash. The whole is then shaken up with ether, and the ethereal solution separated gives, on evaporation, the alkaloid contaminated with foreign matters. The ethereal extract is dried over sulphuric acid, and then redissolved in pure anhydrous ether, from which solution the alkaloid is obtained almost pure. Repeated solution in alcohol or ether removes all the impurities, but a little red colouring-matter, which obstinately adheres.

Esérine is a crystallizable solid, of a faintly bitter taste, which is not immediately perceived. Freely soluble in ether, alcohol, and chloroform, but slightly soluble in water. Crystallizes in thin rhombic plates, which are coloured by polarized light. The aqueous solution has an alkaline reaction. The alkaloid is soluble in acids. The solution acts powerfully upon the pupil. (Journ. de Pharm. p. 71, 1865 ; Chem. News, vol. xi. p. 78.)

Conessine or Wrightine. (Haines.)

In vol. v. p. 493 of the Pharm. Journal, Dr. Stenhouse described a new alkaloid extracted from the seeds of *Wrightia antidysenterica*, which he named Wrightine. Dr. Haynes, of Bombay, draws attention to the fact, that in the year 1858, he described the alkaloid in the Transactions of the Medical and Physical Society of Bombay, and at that time he named it nereine, but alkaloids having been found in the oleanders, to avoid confusion he has adopted the name Conessine, rejecting the term Wrightine as too uncouth.

The *Wrightia antidysenterica* is a small forest-tree, tolerably

abundant over all Western India. The part of the tree on which Dr. Haines operated was the bark, which is of a reddish-brown colour, but lighter towards the wood, and loose and spongy in texture. It was coarsely powdered, thoroughly moistened with hydrochloric acid diluted with six parts of water, and, after twenty-four hours, packed in a percolator and exhausted with cold water. The liquid was precipitated by an excess of ammonia, and the precipitate washed, dried, and exhausted with alcohol. After filtration, the alcohol was distilled off, the syrupy residue mixed with acetate of lead and a little ammonia, evaporated to dryness at a gentle heat and exhausted with ether. The alkaloid occurred as a brownish-yellow semi-transparent resinoid mass. The results of Dr. Haynes's analyses were not sufficiently accordant to allow of the precise deduction of the formula. (Pharm. Journ. vol. vi. p. 432.)

An Alkaloid in Rhatany. (Wittstein.)

Wittstein has obtained, from an extract of American Rhatany, an alkaloid, apparently identical with tyrosine; an analogous result has been obtained by M. Ruge, excepting that he regards the alkaloid as distinct, and differing from tyrosine, by two atoms of carbon. (Journ. de Pharm. March, 1865, p. 235.)

Preparation of Anemonine. (Dobraschinsky.)

This process, which is expeditious, is founded upon the solubility of *Anemonine* in chloroform. The water distilled from *Anemone pratensis* is agitated with one-tenth of its bulk of chloroform for several hours. The two liquids are then separated, and the chloroform distilled; the residue is dissolved in strong alcohol, and allowed to crystallize. The anemonine then separates in fine crystals, possessing the properties of this poisonous alkaloid. (Neu. Repertor. t. xiii. p. 559; Journ. de Pharm. April, 1865, p. 319.)

Colchicin and Colchicein. (Huebler.)

Dr. Huebler has examined this poisonous alkaloid. He finds its best precipitant to be tannic acid. Treated with strong sulphuric acid it is converted into *Colchicein*, an isomeric nitrogenous body, of a slightly bitter taste and acid nature. It combines with soda, baryta, and oxide of copper to form crystalline salts. (Archiv d. Pharmacie, p. 129, 1865.)

Asparagin. (Lucca and Ubaldini.)

MM. Lucca and Ubaldini indicate that the roots of the *Stigmaphyllon jatrophæfolium* contain Asparagin. The plant is a native of Brazil. They obtained the principle from the juice expressed from the root.

They also state that a hot solution of Asparagin when added to a cold solution of acetate of copper, in equal volumes, furnishes a precipitate which may be dissolved in boiling water, and which then separates out on cooling in blue crystals, having the composition $C_8H_7N_2O_5CuO$. (Journ. de Pharm. Jan. 1865; p. 53.)

Detection of Atropine. (Bayerl.)

The author asserts that he is able to discover the presence of $\frac{1}{80}$ th of a grain of atropine in a crystalline state. He treated a frog poisoned by half a grain of atropine with a mixture of 1 part ether and 3 parts of rectified spirit, filtered, evaporated at last on a watch-glass at the ordinary temperature, and obtained crystals. He then added some drops of a cold saturated solution of bichromate of potash, and half a drop of concentrated sulphuric acid. He obtained a yellow powdery precipitate of chromate of atropia. Adding more sulphuric acid, the precipitate disappeared, dark-yellow round disks were formed on the surface of the liquid, which turned rapidly green, from the presence of the sulphate of oxide of chromium. (Wittstein's Vierteljahr. für Pharm. 423, xiv.)

Detection of Santonine in Urine. (Notta.)

When Santonine is taken before bed-time, the urine next morning will be found to turn a cherry-red on the addition of liquor potassæ, even without heating,—an indication similar to that of diabetic sugar. (Wittstein, vol. xiv. p. 284.)

Separation of Quinine from Cinchonine Salts. (Palm.)

A boiling solution of the two salts is added to a solution of pentasulphide of potassium. Cinchonine is thus separated as a white powder, mixed with sulphur; the quinine, on the contrary, separates as a white resinous mass, which becomes hard on cooling. (Chem. Centralblatt, no. 4, 1865; Chem. News, vol. xi. p. 80.)

Arsenite of Strychnia. (Ceresoli.)

This salt, as originally prepared, was made by neutralizing a solution of arsenious acid in dilute hydrochloric acid with strychnia. In this way, however, the salt contains hydrochlorate of strychnia. To obviate this result, M. Ceresoli devised the following process, based on the fact that sulphate of potash is insoluble in alcohol, whilst arsenite of strychnia is readily dissolved by this liquid of 86 per cent. The following is the process:—

Caustic Potash	3·12 grammes.
Arsenious Acid	3·30 „
Distilled Water	60·00 „
Sulphuric Acid	2·65 „
Crystallized Strychnia	12·00 „

Dissolve the caustic potash in 40 grammes of the water, heated to boiling, add the arsenious acid, and form a solution. Then dilute the sulphuric acid with 20 grammes of distilled water, heat to boiling, and add the strychnia, so as to form a complete solution. The two solutions are then mixed, at the temperature of 204° F., adding the arsenite of potash to the sulphate of strychnia. A magma of crystals of sulphate of potash

and arsenite of strychnia is thus produced. Heat causes the latter salt to dissolve when the solution is filtered from the undissolved portion of sulphate of potash, and is then evaporated nearly to dryness. The saline mass thus obtained is treated with alcohol, which separates the remainder of the sulphate of potash. The alcoholic solution is then allowed to evaporate till crystallization occurs, which is in about two days.

The crystals occur in cubes of a dead white. They contain water, which is lost by exposure to air. Heat decomposes it completely, its action being followed by dense white vapours, and an odour of garlic. Soluble in alcohol, less soluble in ether, and soluble in 10 parts of boiling, and 35 parts of cold water. Formula, $C_{42}H_{22}N_2O_4, AsO_3$. Therapeutically recommended by its being a well-defined salt, likely to be uniform in its action. (Journ. de Pharm. May, 1865.)

A Commercial Sample of Sulphate of Quinine. (Stoddart.)

In July last Mr. W. W. Stoddart received a sample of French Sulphate of Quinine for examination. The name of the manufacturer, as stated on the label, was Auguste Thil, at Paris. He could get no information from any of the leading drug-houses in London, in answer to inquiries respecting its commercial relation and importation, nor could he obtain an original bottle till a friend bought one for him from a druggist at Cardiff. As far as he could ascertain, it is principally sold for the use of shippers and surgeons, and, as an inducement to the purchaser, is offered at a low price. In external appearance it differs much from a pure article, such as Howard's or Pelletier's. It is not so distinctly crystallized, and is more silky. It is much more soluble in diluted sulphuric acid than the genuine salt. A quantitative analysis gave 41·3 per cent. of cinchonine, which would be equivalent to 36·31 of the sulphate, the remainder being quinidine and quinine,—the latter forming about 10 per cent. of the whole, and probably a mixture of hydrochlorates and sulphates.

From the foregoing experiments it is evident that the so-

called sulphate of quinine is nothing of the kind, but a mixture of cinchonine and quinidine, with only a tenth of quinine. In short, it is truly what the label ironically states, a "fabrique spéciale." (Proc. Pharm. Conf., Pharm. Journ. Oct. 1865.)

Microscopic Examination of Opiates. (Deane and Brady.)

In this paper Messrs. Deane and Brady report the progress they have made in the investigation of this subject since their first communication. They now find that Mulder's analyses of opium, as quoted by Pereira, are of questionable accuracy. They give the following as more trustworthy; it represents the results obtained from the working of large quantities of Turkey opium by Messrs. Smith, of Edinburgh:—

Morphia	10·	per cent.
Narcotine	6·	"
Thebaine	0·15	"
Papaverine	1·	"
Meconine	0·01	"
Meconic Acid	4·	"
Thebolactic Acid	1·25	"
Codeia	0·3	"
Narceine	0·02	"

It will be seen, on comparing these figures with those given by Mulder, that the discrepancies are quite sufficient to vitiate deductions which might have been drawn from his statements; but the only point in which we have been seriously misled is in the altered importance of *narceine* as a constituent of opium. An average of Mulder's analyses gives about 8 per cent. of this alkaloid, or nearly one-twelfth of the weight of the crude drug, whilst the more recent table sets down the amount as only one five-thousandth. We must take our choice between two alternatives, and assume *either* that the character of the opiums experimented on must have been widely different, *or* that the narceine of Mulder is not the alkaloid known under the name at the present time. There appears still to be some uncertainty hanging about this peculiar principle; and very recent researches

lead to the belief that there are two distinct substances of the same composition and physical characters, but with different reactions, procured from opium by the same process, and associated under the same name; but even this does not account for the figures given by Mulder, as the two substances probably do not coexist in the same opium, and the proportion in which they occur is the almost infinitesimal one given by Messrs. T. and H. Smith. From Pereira we gather also, that narceine, *i. e.* we suppose the narceine of Mulder, is an inert substance; but narceine, as now understood, is regarded on the Continent as superior to morphia in its sedative effects; and the whole quantity that can be produced by the English morphia makers is eagerly taken up for the German market at many times the price of the latter alkaloid. (Proc. Pharm. Conf., Pharm. Journ. Oct. 1865.)

Preparation of Cocain. (Lossen.)

The author gives as the formula of Cocain, the active principle of coca leaves, $C_{17}H_{21}NO_4$, differing by one of carbon and one of hydrogen from the formula of Niemann.

The leaves are exhausted with water acidulated with sulphuric acid. The extract is precipitated with solution of acetate of lead, the excess of lead being removed by a saturated solution of sulphate of soda. The filtrate from the precipitate is made slightly alkaline with carbonate of soda, and then shaken up with several times its bulk of ether. The ether takes up some colouring-matter besides the cocain, which is separated by dialysis. The residue from the ethereal solution is mixed with water, and then acidulated with hydrochloric acid and placed on the dialyser. The hydrochlorate of cocain passes rapidly into the diffusate, leaving the greater part of the colouring-matter behind. To obtain the alkaloid quite pure, it is again precipitated by carbonate of soda, and recrystallized several times.

In colourless six-sided prisms. 1 part soluble in 704 parts of cold water; freely soluble in alcohol and ether.

Several salts of cocain are described, as well as reactions for the hydrochlorate.

M. Lossen establishes a close resemblance between cocain and atropine. (*Annalen der Chem. und Pharm.* Mar. 1865; *Chem. News*, vol. xi. p. 190.)

Ecgonin. (Lossen.)

When cocain is heated with strong hydrochloric acid in a sealed tube it splits up into benzoic acid, methylic alcohol, and base *Ecgonin*, $C_{18}H_{15}NO_6$, in chemical properties closely resembling cocain. (*Annalen der Chem. und Pharm.* Mar. 1865; *Chem. News*, vol. xi. p. 190.)

Goënine. (Blondeau.)

Goënine is a neutral body extracted from *Fucus crispus*, or Carrageen moss. The jelly obtained from this seaweed is not formed of gelatine, but by a neutral body soluble in hydrochloric and nitric acids and potash. The centesimal analysis of Goënine is:—

Carbon	21.80
Hydrogen	4.87
Nitrogen	21.36
Sulphur	2.51
Oxygen	49.46
	<hr/>
	100.00

The abundance of nitrogen shows it to be a valuable nutriment. (*Comptes Rendus*, April 24, 1865; *Chem. News*, vol. xi. p. 208.)

Purification and Preservation of Essential Oil of Almonds. (Tilden.)

Mr. W. A. Tilden suggests two new processes for the purification of crude oil of almonds from hydrocyanic acid. Of these, the first consists in distilling the oil with two or three times its bulk of strong hydrochloric acid, diluted with a little water. The hydrocyanic acid is split into ammonia and formic acid, whilst the essential oil, now pure, is found in the distil-

late. It is separated and neutralized, and dried by a fragment of quicklime. A small loss is incurred from the formation of a compound which contains the elements of hydride of benzoyl, united with those of formic acid; but the whole deficiency, on the large scale, it is believed, would not exceed from 15 to 17 p. cent.

The second process consists in converting the essential oil into the compound which, in common with other aldehyds, it is capable of forming with the alkaline bisulphites. The crude essence is shaken up with about three times its volume of a tolerably strong solution of bisulphite of soda; whereby, in a few minutes, it is converted into a crystalline mass. On evaporation of the whole to dryness at a very gentle heat, hydrocyanic acid volatilizes, whilst the new compound remains mixed with a little excess of sulphite. Carbonate of soda is added to neutralization, and the mixture distilled. The oil, now in a state of absolute purity, distils over, and no loss ensues beyond that of the impurities.

It is recommended to dry the purified essential oil, in order to render it less facile of oxidation.

Test for the Purity of Essence of Mustard.

The oils most frequently used to adulterate Essence of Mustard become brown or red in the presence of concentrated sulphuric acid, while the pure essence dissolves in it.

5 drops of the essence with 50 drops of concentrated sulphuric acid should be introduced into a small tube and shaken together. If the essence is adulterated, the coloration will at once become apparent.

Should rectified petroleum be present, the acid will not colour it; but it may be recognized by its insolubility in the acid floating in the form of a limpid oil. (Chem. Centralblatt, p. 1071, 64.)

Detection of Oil of Mustard in Linseed Oil.

Linseed Oil, when exported from England, frequently contains the expressed oil of mustard. Such oil, when heated, exhibits a mustard smell; when distilled with water it yields a strong-smelling water; when shaken with liquor sodæ the odour disappears, but the liquid blackens metallic silver. (Wittstein, vol. xiv. p. 420.)

Constitution of Aromatic Substances. (Kekulé.)

M. Kekulé considers that in all aromatic substances there is a common group, a kind of nucleus, formed of 6 atoms of carbon. His reasons are as follows:—1. That even the simplest aromatic substances are relatively richer in carbon than the analogous fatty substances. 2. That homologous substances (that is to say, bodies which differ from each other by C_nH_2) exist in aromatic groups. 3. That the simplest bodies belonging to an aromatic group, contain at least six atoms of carbon. Further, by the influence of energetic reagents, we always derive, even from relatively complex matters, substances which only contain six atoms of carbons (benzine, phenic acid, alcohol, picric acid, aniline, etc.). M. Kekulé supposes that in the interior of the nucleus the carbon exists in a more condensed state than in the fatty substances. To comprehend the author's views perfectly, it is necessary to refer to the diagrams contained in the original paper. (Bull. de la Soc. Chim. de Paris, Feb. 1865; Chem. News, vol. xi, p. 117.)

Products of the Action of Fused Alkalis upon Resins.
(Hlasiwetz and Barth.)

The authors, in experimenting upon benzoin, dragon's blood, and Socotrine aloes, found that all these bodies, when fused with caustic potash, gave paraoxybenzoic acid, $C_7H_6O_3$, the aloes yielding the largest proportion. In addition to this, dragon's blood yields benzoic acid, phloroglucial and protocatechuic acid.

Benzoin also yields protocatechuic and oxyphenic acids. (*Annalen der Chem. u. Pharm.* June, 1865.)

Detection of Ergot in Rye Flour. (Jakoby.)

Treat the flour (20 grains) with 30 grammes of boiling rectified spirit, and strain to eliminate fat, resin and colouring-matter. Put the purified sample into a test tube containing 10 grammes of rectified spirit, and 10 or 20 minims of dilute sulphuric acid, shake well and let it subside. The presence of ergot produces a red colour, which may be used for estimation by treating a known mixture of flour and ergot in the same way, and comparing the intensity of colour. (*Wittstein*, vol. xiv.)

New Solvent for Aniline Colours. (Gaultier de Claubry.)

In experiments to discover cheap substitutes for alcohol and wood spirit, the author found that a decoction of soap bark, or of Egyptian soap root, will dissolve the colours, and yield solutions very convenient for dyeing and printing. They possess also the advantage of giving uniform shades. (*Comptes Rendus*, Mar. 27, 1865.)

Preparation of Litmus. (De Luynes.)

Dumas has shown, that when orceine becomes coloured under the influence of air and ammonia, it produces only one colouring-matter, which is orceine. By modifying the circumstances under which orceine becomes coloured, M. de Luynes has succeeded in preparing a product identical with litmus. He adopts the following process:—

Mix orceine with twenty-five times its weight of crystallized carbonate of soda, and five times its weight of water, with an addition of a weight of liquid ammonia, not more than equal that of the orceine, in imperfectly stoppered matrasses. Heat the whole to between 60° and 80° C. for four or five hours, taking care to stir it from time to time. The dark violet-blue liquid is diluted with water, and saturated with a slight excess of

hydrochloric acid, which precipitates the colouring-matter, which, when washed and dried, is pure litmus.

Thus prepared, it is in the form of small irregular masses, with the variegated metallic reflections common to most colouring-matters. Very slightly soluble in cold water, to which it imparts a wine-coloured tinge, which, by contact with acids, turns to the colour of onion skins, and with alkalies to violet-blue, in alcohol also, which it colours yellow. The alcoholic solution diluted with water, constitutes a reagent extremely sensitive to the slightest traces of an alkaline substance. By adding a little potash to it, it behaves in the same way towards acids as ordinary litmus solution. This product keeps without altering in the dry state, and the cold solution can be very rapidly prepared. (Journ. de Pharm.; Chem. News, March 31, 1865; Amer. Journ. Pharm. May, 1865.)

The Use of Litmus Tincture by Gaslight. (Blades.)

When tincture of litmus is used by gaslight for the purpose of determining the point of neutralization, it is almost impossible to note the change with precision, in consequence of the blue colour appearing mauve. Mr. Blades proposes to remedy this by watching the change through a piece of light green glass. The faintest trace of blue is then visible, owing to the green glass absorbing the red ray and transmitting the blue, while the change to red will show an olive tint. The best sort of glass is that used for green spectacles. (Pharm. Journ. vol. vi. p. 479.)

Microscopical Researches on the Alkaloids as existing in Cinchona Bark. (Howard.)

Mr. J. E. Howard gives a most interesting paper on this subject, illustrated by a number of fine engravings. He states that sections of red bark, when properly prepared, and viewed under the microscope, show numerous stellate groups of crystals diffused irregularly through the substance of the bark. These crystals he regards as *Kinovate of Quinine*. (Pharm. Journ. May, 1865.)

Action of Light on Certain Vegetable Principles. (Jodin.)

Saussure has stated that rectified essence of lavender in four years absorbed 119 volumes of oxygen and produced 22 volumes of carbonic acid, the change being singularly promoted by the action of light. M. Jodin has made some experiments on the effect of light in promoting the oxidation of this oil, and also of certain other principles. He found that 10 cubic centimetres of alcohol, containing 0.44 gramme of essence of lavender, absorbed in 40 days, under the influence of solar light, more than 7 cubic centimetres of oxygen, and produced only 0.1 or 0.2 c. c. of carbonic acid. An equal volume of the same solution in the dark absorbed only 1.3 c. c. of oxygen. Turpentine gave similar but less active results. An alcoholic solution of tannin may be kept indefinitely in the dark without change, but when exposed to light, oxygen is absorbed and carbonic acid evolved. 0.1 gramme of tannin dissolved in 10 c. c. of alcohol, in twenty-eight days absorbed 4 c. c. of oxygen, and produced 1.8 c. c. of carbonic acid. An aqueous solution showed precisely similar results, but special precautions were necessary to preclude the formation of mycodermic vegetation.

M. Jodin has made a number of similar experiments upon chlorophyll. He has operated upon this principle in a pure state, and he finds that, dissolved either in alcohol or in alkalis, it may be kept in the dark without any oxidation taking place, but that when exposed to light these solutions gradually absorb oxygen and evolve carbonic acid. (*Journ. de Pharm.* Jan. 1865, p. 55.)

On the Oxidation of Fatty Vegetable Oils. (Cloëz.)

M. Cloëz experimented upon the influence of light and heat on the oxidation of oils. He exposed oils to the air in colourless glass vessels, and also in vessels of red, yellow, green, and blue glass, and also left some oil exposed to air in total darkness. After ten days' exposure, the increase of weight was greatest in the colourless glass vessel; it was rather less in the blue glass;

was very small in the red, yellow and green; and no increase of weight was observed in the oil exposed in the dark. After the expiration of thirty days the increase of weight was greater in the coloured glasses than in the uncoloured, green, showing the largest increase after one hundred and fifty days' exposure. Poppy oil oxidized faster in the dark than when exposed to coloured or white light. Oil heated in atmospheric air oxidized more rapidly than cold oil. (*Comptes Rendus*, Aug. 21, 1865; *Chem. News*, Sept. 1865.)

Test for the Purity of Olive Oil. (Lallier.)

In a long paper, M. Lallier describes the action of chromic acid upon this oil, and founds a test for the purity of the oil, upon the result of these observations.

A mixture of 2 parts of a solution of chromic acid and 1 part of nitric acid is added to the oil, in the proportion of 2 grammes of the former to 8 grammes of the latter; the whole is agitated, and, if the oil be good, no heat should be disengaged, and no thickening should take place for at least twenty-four hours. (*Journ. de Pharm.* March, 1865, p. 180.)

Action of Diastase on Starch. (Payen.)

The following conclusions have been arrived at by M. Payen, after elaborate experiments:—

1st. That diastase exercises a saccharifying action on dextrine.

2nd. That this action is impeded by the presence of the glucose formed, but is resumed when the glucose is eliminated.

3rd. That the transformation of glucose into alcohol, during the alcoholic fermentation, presents no obstacle to the saccharization of the dextrine by diastase.

4th. That in favourable conditions of the action of diastase on starch, as much as 50 per cent. of glucose may be obtained.

5th. That it has not been possible to obtain 0.8791 of the starch used; but the maximum product has not exceeded 0.5271. (*Ann. de Chimie et Phys.* March, 1865.)

PHARMACY.

Extract of Meat. (Liebig.)

This preparation was first described by Professor von Liebig in the year 1847. It was afterwards introduced into the Bavarian Pharmacopœia, and has since been in frequent use in Germany. During the past year a great deal of attention has been directed to this substance, some quantity of it having been imported into Europe from South America at a reduced price.

The first article, descriptive of this imported extract, was by Professor Liebig. He states that he had frequently urged the importance of preparing the extract in countries where meat possesses very little value, but that his efforts had not been attended with success. In 1862, however, Herr Giebert, of Hamburg, an engineer who had spent many years in South America, declared his desire to attempt the manufacture of the extract in that country. Professor Liebig introduced him to the Court-pharmacy at Munich, and made him acquainted with all the details of the process. Herr Giebert afterwards returned to Uruguay, and there carried his plan into execution. Professor Liebig states:—

“Herr Giebert had expressed a wish to me, that he might designate his extract of meat by my name, as it was prepared after my method. I agreed to this, but at the same time remarked, that if his product contained the slightest trace of fat (whereby it acquires a rancid condition), or if gelatinous matter was predominant, as in the ordinary soup tablets or *consommé*

(whereby it becomes inclined to mould and loses the unalterability at high temperatures and in damp air which characterizes the genuine extract), I would be the first publicly to notify the uselessness of the same.

“The first sample of extract, of about eighty pounds of extract of beef, and thirty of that of mutton, arrived in Munich some days ago, and we have the great satisfaction to be able to say that its quality is excellent, as was to be expected from the flesh of half-wild sheep and oxen.”

Speaking of the utility of the extract, Liebig also states:—

“Since the introduction of this extract of meat (which is not to be confounded with the so-called *consommé* or soup-tablets) into the Bavarian Pharmacopœia, its great efficacy in cases of disturbed nutrition, of impaired digestion, and of debility, has been practically confirmed, and it will perhaps suffice to give an idea of the extensive use made of the extract of meat as a remedy, to mention that in the court-pharmacy here nearly 5000 pounds weight of beef are annually employed for this object. It may be worthy of remark that a great part of the extract of meat in the Bavarian pharmacies is sold by retail,—that is, without a physician’s prescription,—an indubitable proof that it has become a domestic remedy, to which those persons who have experienced its beneficial effects in the form of medicine resort spontaneously in similar derangements of health; these are often very poor people, who are least inclined to spend money upon medicine, and whom the high price of this remedy (1 fl. 12 kr. per oz.) does not deter.

“Parmentier and Proust have for many years most strongly recommended the extract of meat for use in the French army. ‘In the train of a regiment,’ says Parmentier, ‘the extract of meat supplies the severely-wounded soldier with a remedy which, with a little wine, immediately restores his strength, enfeebled by great loss of blood, and places him in a position to bear being transported to the nearest camp-hospital.’

“A pound of extract of meat is sufficient, when boiled with slices of bread, potatoes, and some salt, to afford a meat soup

for 128 soldiers, such as is not to be had of equal strength in the best hotels. Coffee and tea, although valuable in themselves, are in the end to be considered as only imperfect substitutes for the extract of meat. In fortresses and in the navy, where the men are thrown upon salted and smoked meat, the extract is the only means of supplying the important constituents which are removed from the meat in the process of salting, and of restoring to it the complete nutritive power of fresh meat." (*Annalen der Chem. und Pharm.* January, 1865.)

Liebig's Process for Extract of Meat.

In consequence of the attention which has been recently directed to this preparation, we give the following extract from Liebig's paper in the *Annalen der Chem. und Pharm.* for 1847:—

"If one pound of lean beef, free from fat and bone, finely chopped as when used in sausages, be equally mixed with its own weight of cold water and slowly heated to the boiling-point, the fluid being then, after boiling for some minutes, separated by expression through a napkin, from the coagulated albumen and from the fibrin which has become hard and horny, we obtain an equal weight of the most aromatic broth, such as cannot be obtained even by boiling for hours from a piece of meat. Mixed with some salt and the other adjuncts with which soup is seasoned, and coloured somewhat darker with roasted onions or burnt sugar, this broth furnishes the best soup which can be prepared from a pound of meat. The influence which the (brownish) colour of the soup exercises on the taste, in consequence of the ideas connected with the colour, is easily proved. Soup coloured with a little caramel (roasted sugar) has, in the opinion of all persons, a much stronger taste than the same soup when not coloured, although the caramel, in fact, in no way enhances the taste.

"If we allow the meat to boil longer with the water, or evaporate the broth at a boiling temperature, it spontaneously

acquires on concentration a brownish colour and a delicate taste of roast meat. If we evaporate it to dryness in a water-bath, or, if possible, at a still lower temperature, we obtain a dark-brown soft mass, of which half an ounce is sufficient to convert a pound of water, to which a little salt is added, into a strong and palatable soup.

"This extract of meat is not to be classed with the so-called soup or broth tablets prepared in England and France, for the latter are not made of meat, but consist of gelatin in a state of greater or less purity, which is distinguished from bone-glue only by its high price.

"From thirty-two pounds of lean beef, free from bone and fat (consisting of eight pounds of dry meat and twenty-four pounds of water), we obtain one pound of this extract, which, on account of its high price, can scarcely become an object of trade; but if the experience of military surgeons agrees with that of Parmentier, according to which 'the dry extract of meat in the train of a corps, supplies the severely wounded soldier with a restorative, which, with a little wine, immediately raises his strength exhausted by great loss of blood, and enables him to bear being transported to the nearest hospital,'* it seems to me to be a pure matter of conscience to recommend Parmentier's and Proust's proposal to the attention of governments.

"Now, if the composition of this extract be somewhat more precisely known, any skilful apothecary can easily distinguish the genuine from the false preparation. Of the true extract of meat nearly 80 per cent. dissolve in spirit of wine 85 per cent., while rarely more than from 4 to 5 per cent. of the ordinary soup tablets are dissolved by the same fluid. The amount of creatin and creatinin, which latter is immediately recognized in the spirituous solution by means of chloride of zinc, and the nature of the salts remaining after incineration, consisting principally of soluble phosphates, furnish sufficient resting-points for estimating the goodness of the genuine extract.

"I consider this extract to be not less important for provi-

* See Proust, *Annales de Chimie et Physique*, 3rd series, t. xviii. p. 177.

sioning ships and fortresses, to preserve the health of the men in those cases where there is a want of fresh meat and vegetables, and where the men are dependent on salt meat.

“It is generally known that in salting meat the latter is rubbed and sprinkled with common salt, and that in the points where the meat and salt come in contact, a brine is formed, amounting to a third or to half of the fluid which formed a constituent of the fresh meat.

“I have found that this brine contains the principal constituents of a concentrated soup; that, therefore, in salting, the composition of the meat is altered, and in a still greater degree than occurs in cooking. In cooking, the highly nutritious albumen remains in a coagulated state in the meat, but in salting, albumen separates from the meat; from the brine when heated to the boiling-point a quantity of albumen separates as a coagulum. The brine has an acid reaction; it gives with ammonia, on the addition of a salt of magnesia, copious precipitate of ammoniaco-magnesian phosphate; it contains lactic acid, a large quantity of potash; and that it contains creatin, which I was unable to separate from the great excess of common salt, may be undoubtedly inferred from the amount of creatinin present. Thus, the brine neutralized with lime yields, after the crystallization of the common salt, a ley, from which, after some time, on the addition of alcohol and then of chloride of zinc, the double salt of creatinin, which I have already frequently mentioned, is deposited.

“Hence, it is quite clear, that in salting meat, if the latter be rubbed so much that a brine is formed, a number of matters are withdrawn by the separation of the fluid of meat which are necessary to its constitution, and that in proportion to this loss its nutritive properties are impaired; if these constituents are not replaced from other sources, it is evident that a portion of the meat becomes a respiratory matter certainly not conducive to health. It is further certain that by salted meat, if its quantity be not increased, the health of an individual cannot be permanently maintained, inasmuch as by its constituents, the parts of

the body removed in the metamorphosis of tissue are not fully replaced, and the fluid diffused through the whole body (fluid of meat) is not kept in its normal composition. A change in the nature of the gastric juice, and consequently in that of the products of digestion, must be looked upon as a result of the long-continued use of salt meat; and if, during digestion, the matters which are indispensable to its progress are taken from other parts of the body, the latter must lose their normal condition."

Nutritive Value of Liebig's Extract of Meat.

A long discussion has taken place in the pages of the 'Lancet' on the value of Liebig's Extractum Carnis as an article of diet. Dr. Hassall, in the course of a long letter, thus speaks of this preparation :—

There is no doubt that Liebig's Extractum Carnis is an agreeable and valuable article of food, well adapted for the invalid; but whether it possesses all the nutritive value which has been attributed to it is well worthy of consideration. If it do not possess nutritive powers nearly to the extent assigned to it, then it is proper the fact should be clearly established, since incalculable mischief must inevitably result from according to it, in the treatment of the sick, a higher value than that to which it is entitled.

According to the statements made respecting the preparation of this extract, it appears that the greatest care is taken to exclude from it all fibrin, gelatine, albumen, and fat. Now if the article be entirely freed from these principles, what constituents of the meat, it may be asked, are present to endow it with high nutritive power? Excluding the proximate principles above named, there remain chiefly creatine, creatinine, inosic acid, inosite, butyric acid, and the salts of the blood, especially the phosphates. Now of these the first two are excrementitious substances, and therefore there is reason to believe they do not take part in nutrition, while inosite is a non-nitrogenous substance.

But before commenting further upon the composition of

Liebig's extract, I will proceed to state some of the results of its analysis.

Percentage composition.

Water	18.20
Organic alcoholic extractive matter : containing creatine, creatinine, inosic acid, inosite, etc. (Sp. gr. of alcohol .830) . .	37.60
Organic extractive matter, insoluble in alcohol : containing 7.7 grs. of matter precipitable by tannin, gelatine (?), and .75 of a grain of albumen	22.95
Ash	21.25
	<hr/>
	100.00

It is stated that thirty-two pounds of raw beef freed from bone, tendon, and fat, furnish but one pound of Liebig's extract, and hence the inference has been drawn that one pound of this extract is equivalent in nutritive value to thirty-two pounds of lean fresh beef. The analysis just given above affords us the data to ascertain whether this is so or not. According to that analysis one pound of the extract contains 589.4 grains of nitrogen, the ingredient which gives to the extract and to meat generally its principal nourishing property; but one pound of lean beef contains about 233.7 grains of nitrogen: therefore, so far as the nitrogen is concerned, nearly two pounds and three-quarters of lean beef are thus seen to be equal to one pound of the extract, and not thirty-two pounds, as stated.

In a postscript to this letter Dr. Hassall states that he has "met with samples, denominated 'Liebig's Extract of Meat,' largely adulterated with salt." ('Lancet,' vol. ii., 1865, page 49.)

Dr. W. Stevens Squire, replying to Dr. Hassall, states:—

The object which Liebig had in view when devising this preparation was to extract from the meat and preserve in a portable form just those constituents of the meat which distinguish it as a diet from vegetable food. Fibrin, gelatine, albumen, fat—all have their dietetic representatives in the vegetable kingdom, and were therefore excluded from the extract. Accordingly, when vegetable food containing the equivalents of these substances is

mixed with a certain proportion of the extract of meat, it is converted, so to speak, into animal food. The extract gives flavour to the food and tone to the stomach. Its value does not consist in supplying matter to the body, but in rendering digestion and assimilation possible in cases of debility. It contains no albumen or protein matters. How then is it possible to ascribe to it any nourishing quality, or to compare it with flesh or other food? Dr. Hassall has expended much science and arithmetic to prove that one pound of extract does not contain the same quantity of nitrogen as thirty-two pounds of beef (about the quantity used for a pound of extract), and comes very naturally to the conclusion that the extract does not represent as a food the meat from which it is derived, and that a man who ordinarily consumes two pounds of beef would starve on an ounce of the extract. All that Dr. Hassall says is perfectly true—indeed it is so obviously true as hardly to be worth saying at all. ('Lancet,' vol. ii. 1865, page 386.)

Mr. Vosper agrees with Dr. Hassall, that the extract of meat is very deficient in nutritive value. He judges it solely by the quantity of nitrogen it contains. ('Lancet,' vol. ii. 1865, page 441.)

Professor Liebig, replying to all these objections, states:—

I see that rather contradictory views are expressed by different English writers on the value of the extract of meat, some taking it to be a complete and compendious substitute for meat, whilst others assert that it has no nutritive value whatever. The truth, as is usually the case, lies in the middle; and as I was the first who entered more fully into the chemistry of meat, I may be allowed shortly to state the results of my investigations, as far as the *Extractum Carnis* as a nutriment is concerned.

Meat, as it comes from the butcher, contains two different series of compounds. The first consist of the so-called *albuminous* principles (*i. e.* fibrin and albumen) and of glue-forming membranes. Of these fibrin and albumen have a high nutritive value, although not if taken by themselves. The second series consists of crystallizable substances, *viz.* creatin, creatinin, sarcin, which

are exclusively to be found in meat; further, of non-crystallizable organic principles and of salts (phosphate and chloride of potassium). All of these together are called the *extractives of meat*. To this second series of substances beef-tea owes its flavour and efficacy; the same being the case with Extractum Carnis, which is, in fact, nothing but solid beef-tea; that is, beef-tea from which the water has been evaporated. Besides the substances already mentioned, meat contains, as a non-essential constituent, a varying amount of fat. Now, *neither fibrin nor albumen* is to be found in the Extractum Carnis which bears my name; and gelatine (glue) and fat are purposely excluded from it. The albuminous principles wanting in the extract of meat can be replaced by identical ones derived from the vegetable kingdom *at a much lower price*. Just the reverse is the case in regard to the *extractive* matters of meat, for (their salts excepted) it is impossible to find any substitute for them. On the other hand, they may be extracted from the meat and brought into the market in a palatable and durable form. In conjunction with albuminous principles of vegetable origin they have the full nutritive effect of meat. From the extractive matters, then, contained in Extractum Carnis in a concentrated form, the latter derives its value as a nutriment for the nations of Europe, provided it can be produced in large quantities and at a cheap rate from countries where meat has no value.

On the value of extract of meat, as a medicinal substance, it is unnecessary to say a word, it being identical with beef-tea, about the usefulness and efficacy of which opinions do not differ. At the same time I may remark that it is a mistake to think that beef-tea contains any albumen; that there ought to be any gelatine or drops of fat to swim on its surface. Beef-tea does not contain any albumen, and if rightly prepared, ought to be free from gelatine (or glue), whilst the supernatant drops of fat form a non-essential, and for many, an unwelcome addition.

Several other communications on this subject also appeared in the 'Lancet,' vol. ii. 1865.

Adulteration of Extract of Meat. (Liebig.)

In consequence of a statement by Dr. Hassall that he had met with samples denominated Liebig's extract of meat which were largely adulterated with salt, Professor Liebig examined a number of specimens got from English houses. He states :—

With this view, and in consequence of the above statement by Dr. Hassall, samples were bought from all such London firms as had obtained South American extract from Antwerp (through persons unknown to them), and carefully examined.

To prove an addition of salt, it sufficed to determine the percentage of ash in the extract.

The unadulterated *Extractum Carnis* leaves 21·6 to 22 per cent. of ash; if adulterated with salt, the amount of ash would be found higher.

The extract taken from the following firms contained—

	Percentage of ash.
Van Abbott	21·7
Allen and Hanburys	22·2
Wm. Hooper	22·1
Foster	21·7
Savory and Moore	21·6
Leo Lee	21·7

These results of analysis prove that Dr. Hassall's statement does not apply to the above firms.

Remarks on Extracts of Meat. (B. Brady.)

This was a short verbal communication to the Pharmaceutical Conference, which will well supplement the foregoing papers :—

There are several forms in which the soluble extractive of meat had been used, either for general dietetic purposes, or for the convenience of the sick-room: the most important were those obtained from beef. Firstly, there are the fluid preparations represented by Gillon's "essence of beef;" secondly, those of gelatinous consistence, of which excellent examples are largely sold by one or two London manufacturers, to which class also belongs the so-called "osmazôme glacée;" thirdly, the more

permanent soft extractive, free from gelatine, known as "extractum carnis, Liebig;" and fourthly, a somewhat similar article, thickened with starchy matter, and evaporated further so as to form lozenges or tablets.

Gillon's "essence of beef" is, Mr. Brady believes, exactly what the makers profess, a carefully prepared beef-juice, having many advantages over anything that had preceded it for use in the sick-room. There are, however, drawbacks in connection with it; it is insipid, variable in strength, contains a good deal of gelatine, and does not always agree with invalids; still, it is a convenient and valuable basis for beef-tea, and it is fortunate that, with the present uncertain supply of other meat-extracts, there is anything so reliable to be obtained, even at a somewhat advanced price.

Of the gelatinous preparations he had only seen the "concentrated beef-teas," prepared by Messrs. Fortnum and Mason and Messrs. Brand and Co. These are supplied of the consistence of firm jelly, done up in skins, each weighing half a pound to a pound. They appear to be, essentially, extracts of beef containing the gelatine, and when fresh, answers well for the preparation of beef-tea. The great objection to them is the difficulty of keeping them; in a damp place the bladders mould on the outside, in a dry place the jelly loses water, and after a time becomes quite hard, and about the texture of glue, in which condition it is dissolved with great difficulty. The price, too, is against their general introduction. Recently, a material of somewhat similar character has been largely imported into France, from Rio Grande, under the name of "osmazôme glacée," of which he regrets that he has not yet been able to procure a sample, but it appears, from all accounts, to have the worst qualities of this somewhat objectionable form of extract.

The author then proceeds to give an account of the "extractum carnis" of Liebig, the substance of his remarks being confirmatory of the observations made by Liebig and Pettenkofer.

Liebig's Food for Infants. (Liebig.)

The following is extracted from the paper in which Liebig described his new soup for children, which is now very extensively used :—

To obtain proper ideas on this subject, it would probably be well to call to mind that milk contains two kinds of matters, which minister to different functions in the system : from the casein in the milk the principal constituent of the blood is formed, and from the latter the principal constituent of the flesh ; the butter and the sugar of the milk serve various other purposes in the body, and are used, in their ultimate form, for the development of animal heat.

The food of man and that of animals have a composition similar to that of milk, in so far as they invariably consist of a mixture of two kinds of matters, of which one fulfils the same office as the casein, while the other supplies the place of the fat and of the sugar of milk ; the formation of blood or flesh, and the temperature of the body being thus maintained through the food.

The seeds of the cerealia contain a substance identical with coagulated casein, the seeds of the leguminosæ, peas, and beans contain a matter identical with the cheese as it exists in milk. It is true that the flour of the cerealia contains no sugar of milk and but little fat, but it is rich in starch, which in the stomach is converted into sugar.

For the normal maintenance of the vital process, the relative proportion of blood- and warmth-creating matters in the food of the animal is not indifferent ; in order to increase in his bodily weight, or to grow, the individual needs not only an increasing mass of food, but a varying proportion of blood- and warmth-creating constituents in the food.

A deficiency of warmth-creating constituents may be replaced by an excess of blood-creating matters, but this excess then loses its power to increase the weight of the body. The warmth-creating matters are incapable of producing blood ; an excess beyond the proper proportion loses its efficiency.

The composition of milk is not constant; its amount of casein, sugar-of-milk, and butter, varies with the food with which the individual is nourished. According to the analyses of Haidlen, the milk of a healthy woman contains in 100 parts 3·1 of casein, 4·3 of sugar-of-milk, and 3·1 of butter; woman's milk is in general poorer in casein than cow's milk.

If we assume that 10 parts of butter produce in the animal body the same warmth-creating effect as 24 parts of starch, and likewise 18 parts of sugar-of-milk that of 16 parts of starch, we can by the aid of these numbers compare the nutritive value of milk with that of the flour of the cerealia, if we express butter and sugar-of-milk in their equivalents of starch.

In this manner we find that there are contained:—

	Blood-forming matters.	Warmth-producing matters.
In woman's milk	1	3·8
In cow's milk, fresh	1	3
In cow's milk, skimmed	1	2·5
In wheaten meal	1	5

Woman's milk is poorer in salts than cow's milk; but it has a stronger alkaline reaction and contains more free alkali, which *in the different sorts of milk is potash*.

It is evident that we can easily calculate a mixture of milk and flour (a milk-pap), which shall contain precisely the same proportions of blood- and warmth-producing aliments as woman's milk (namely, 1:3·8); but this mixture could not in other respects replace woman's milk, as wheaten flour has an acid reaction, and contains much less alkali than woman's milk, and (as we must suppose), than is required for normal blood-formation. Moreover, even if starch is not unfitted for the nourishment of the child, by its conversion into sugar during the process of gastric digestion an unnecessary labour is imposed upon the system, which the latter is spared, if we first convert the starch into the soluble forms of sugar and dextrin. This can easily be done by adding to wheaten flour a certain quantity of malt flour. If we boil milk with wheaten flour to a thick

pap, and add to the latter a certain amount of malt flour, the mixture after a few minutes becomes fluid and acquires a sweet taste.

On this conversion of the starch into sugar, and on supplementing the alkali in the milk, depends the formation of the new soup, which I shall now describe.

The skimmed cow's milk usually sold seldom contains more than 11 per cent. of solid combustible matters (4 casein, 4.5 sugar, 2.5 butter); 10 parts of cow's milk, 1 part of wheaten flour, and 1 part of malt flour, afford a mixture which possesses very nearly the nutritive value of woman's milk :—

	Blood-forming constituents.	Warmth-producing constituents.
10 parts of cow's milk contain . .	0.4	0.74
1 part of wheaten flour contains .	0.14	1.00
1 part of malt flour ,, .	0.07	0.58
	<hr/>	<hr/>
	0.61	2.32
	<hr/>	<hr/>
	1	3.8

The malt flour contains 11 per cent. of blood-forming matter, of which, however, only 7 parts enter into the soup.

As wheaten flour and malt contain very much less alkali than woman's milk, this must be supplied in the preparation of the soup. I have found that the addition of $7\frac{1}{2}$ grains of bicarbonate of potash, or of 3 grammes or 45 grains of a solution of carbonate of potash, containing 11 per cent. of the salt, suffices to neutralize the acid reaction of both kinds of flour.

In the preparation of the soup we proceed as follows :—1 part by weight (half an ounce) of wheaten meal is placed in the little vessel intended for making the soup; to this the milk is gradually added in small portions with constant stirring, the conglomeration of the meal into lumps being carefully avoided; this mixture is heated with diligent stirring to the boiling-point, at which it is kept for three or four minutes, and is then removed from the fire.

1 part (half an ounce) of malt flour is now weighed, carefully mixed with 45 grains of the solution of carbonate of potash just

mentioned, and with 2 parts by weight of water, and this mixture is now added with constant stirring to the milk-pap; the vessel is then covered to avoid cooling, and is allowed to stand for half an hour.

It is advisable, after the addition of the malt flour, to place the vessel in hot, nearly boiling water, so that the mixture may the longer keep warm; it thus becomes thinner and sweeter. After this time the whole is placed once more on the fire, is allowed to boil again, and the soup is then passed through a fine wire or hair-sieve, which retains the bran of the malt flour.

Those who are acquainted with the mashing process need not be reminded that after the addition of the malt the temperature should not exceed 151° F. The above directions are so calculated that, including the time used in weighing and mixing the water with the malt flour, we have, after the addition of the latter to the hot milk-pap, a mixture of the temperature of 151° F.

The following process is simpler, and, as cooks maintain, more convenient than that just described:—

Half an ounce of wheaten meal, half an ounce of malt flour, and $7\frac{1}{2}$ grains of bicarbonate of potash, are weighed, mixed first with one another, and afterwards with an ounce of water, and lastly with 5 ounces of milk; the mixture is then heated, with constant stirring, over a very gentle fire, until it begins to grow thickish; the vessel is now removed from the fire and its contents are stirred for five minutes, these are then heated once more and again removed, when a new thickening occurs; lastly, the whole is brought to a boil. After the separation of the bran from the milk through a fine sieve, the soup is ready for use.

Wheaten Meal.—For this ordinary new meal is chosen, not the finest or first shot meal, which is richer in starch than the whole meal.

Malt.—Barley malt can easily be procured from any brewer. In Germany, or rather in Munich, the malt is so much dried

that the starch of many grains appears to be half roasted. This malt employed in making the soup gives to the latter a taste of bread, which is not unpleasant; usually the malt contains an admixture of many seeds of weeds, which must be picked out with the hand. An ordinary coffee-mill answers for preparing the malt flour; the latter must likewise be separated by means of a hair-sieve, not too fine, from the chaff. Malt prepared from barley is to be preferred to that from oats, wheat, or rye.

Carbonate of Potash.—For the preparation of the solution the ordinary kali carbonas depurata of the pharmacies answers very well; 2 ounces of the salt are dissolved in 16 of water. If spring water be used, there is generally a precipitate of some carbonate of lime; after an hour the fluid becomes quite clear and bright. The carbonate of potash must not be greasy or damp. The bi-carbonate of potash is the ordinary crystallized salt.

Note.—In order to avoid the rather troublesome weighing of the flour, we may observe that a heaped tablespoonful of wheaten meal weighs nearly exactly half an ounce; a heaped tablespoonful of malt flour, wiped off at one-half with a card, likewise weighs half an ounce.

For measuring the solution of potash an ordinary thimble answers: this when filled holds nearly 3 grammes (45 grains, 2·8 cubic centimetres) of the solution of potash.

For the milk and the water 2 ounces are weighed in an ordinary tumbler, then 5 ounces of water, and the heights at which both quantities of fluid stand are marked on the outside of the glass by attaching pieces of paper.

When the soup is properly prepared it is as sweet as milk, and the further addition of sugar is unnecessary; it possesses double the concentration of woman's milk, and can, which is not unimportant for sucklings, be given in the nursing-bottle. If it has been heated to the boiling-point, it keeps good for twenty-four hours; if this has not been done, it turns sour and coagulates like milk; if the addition of potash be neglected, it cannot, in general, be heated to the boiling-point without coagulating. In the absence of the potash the soup is difficult of digestion, like ordinary milk-pap.

Food for Infants. (Hassall.)

Dr. Hassall, commenting on Liebig's soup for children, writes as follows :—

Correct and ingenious as are the principles upon which this food has been designed, yet the directions given for its preparation are certainly open to considerable improvement. Thus Liebig directs that the malt should be ground in a common coffee-mill, and the coarse powder passed through a sieve. This necessitates the subsequent straining of the food—a tedious operation,—in order to remove the bran and remaining particles of husk. And further, that the food should be put upon a “gentle fire” previous to its being finally boiled. Now, a gentle heat may mean almost any temperature nearly up to the boiling-point; and, since the action of the diastase is destroyed at 150° F., the temperature ought never to be allowed to exceed that degree.

I recommend, therefore, that the malt should be well freed from husk and finely ground; that the wheat flour should be lightly baked; and, finally, that a thermometer should be employed in the preparation of the food. Indeed, in some samples recently submitted to me by Messrs. Savory and Moore, I find that the first two points noticed have been attended to, and that they use malt freed from husk and finely ground, and the wheat flour baked.

The effect of baking the wheat flour is to partially cook the starch entering into its composition, so that less heat is required in the preparation of the liquid food. I find that a temperature ranging between 140° and 148° is amply sufficient to effect the complete transformation and solution of the starch corpuscles, and, indeed, to cook the food sufficiently. (*Lancet*, vol. ii. 1865, p. 135.)

Dr. W. S. Squire makes the following remarks on Dr. Hassall's suggestions :—

The chief object of this letter is, apparently, to prove that the original formula of Liebig is open to considerable improvement, and that this improvement consists, first, in finely grinding the

malt; and, secondly, in previously submitting the wheat-flour to the action of heat, so as to convert the starch into dextrin. In both these recommendations I believe Dr. Hassell to have erred.

Long experience in the use of malt has taught the brewers far better. They never use malt finely ground, because it does not produce in the mashing process a thin clear sweetwort, but a slimy gelatinous liquid. This is owing to a substance contained in the malt and barley, the properties of which are something between those of starch and cellulose. When the malt is coarsely ground this slimy matter does not dissolve to anything like the same extent, and this is the reason why Liebig insists so strongly on *coarsely*-ground malt. In Germany the manufacturers of this food use malt ground in a coffee-mill, without separating even the husk by a sieve; and this plan is found to succeed excellently.

The previous baking of the flour has for its avowed object the conversion of the starch into dextrin. Now this conversion requires a rather higher temperature than is generally supposed, and, when accomplished, it is at the cost of the partial destruction of the gluten, which, as the blood-forming element, is a serious matter. (Lancet, vol. ii. 1865, p. 387.)

Report on Pepsine. (Guibourt.)

Some time back, the Society of Pharmacy of Paris appointed a commission, consisting of MM. Guibourt, Boudet, Boudault, Regnault, Bussy, and Dr. Corvisart, to examine the different commercial forms of Pepsine, and to determine their respective values as digestive agents. M. Guibourt, on behalf of the commission, has presented to the Society a valuable and exhaustive report on the subject, which fills about fifty pages of the 'Journal de Pharmacie.' The report commences with an account of the various processes which have been published for the preparation of Pepsine. Some of these, especially those which furnish the so-called *German Pepsine*, are stated to yield

an offensive and objectionable product. The *Officinal Pepsine*, prepared at the École de Pharmacie by the process of M. Boudault, is the one principally employed by the commission in their experiments, and obviously considered to be the best suited for use in medicines. The following is the process given :—

As soon as the stomach (*caillette*, or “rennet-bag”) is removed from the sheep which has been killed, it is opened, cleansed from the food it contained, and the mucous surface rubbed with a brush; a pulp results, the quantity of which is about 10 litres from five hundred stomachs. This pulp is mixed with 20 litres of water, and allowed to macerate with frequent agitation for two hours. The whole is then thrown on a coarse cloth, and the filtration facilitated by a gentle stirring. A solution of 750 grammes of acetate of lead is then added to the filtrate; a very abundant precipitate forms. The supernatant liquid is decanted, and twice replaced by clean water. The precipitate is diffused through fresh water, and a decided excess of sulphuretted hydrogen passed through the liquid, care being taken that the whole of the lead is converted into sulphide. The sulphide of lead is then separated by a number of filters, and the filtrate *immediately* submitted to evaporation in shallow vessels, exposing a large surface, at a temperature not exceeding 45° C. The evaporation is continued until the product is dry. During the time necessary to scrape it together, it assumes the condition of a firm paste. 125 grammes were obtained from the pulp yielded by 500 sheep.

This *Officinal Pepsine* is a firm paste of an amber colour, opaque, and possessing an odour not very agreeable, but neither repulsive nor putrid. It has an acid taste; it dissolves slowly in cold distilled water, but the liquid is troubled, and gives on filtration 1·14 per cent. of a residue which burns with the odour of horn. The filtered solution gives an acid reaction with litmus; is slightly troubled by boiling, a few light flocks separating on cooling; furnishes an abundant white precipitate with alcohol, and is not affected by nitric acid in the cold, but when boiled with it it turns yellow without losing its transparency.

It is not affected by bichloride of mercury, neither does it reduce chloride of gold. It contains sulphuric, hydrochloric, and phosphoric acids, and also lime.

The acidity of this Pepsine was determined by neutralization with an alkali: 100 parts required 14·4 parts of anhydrous carbonate of soda, and, during saturation, 6 parts of phosphate of lime were precipitated. The analysis of the Pepsine was effected by the addition of a solution of acetate of lead. The following centesimal results were obtained.

A. In the precipitate formed by acetate of lead :—

Real Sulphuric Acid	3·83
Anhydrous Phosphoric Acid	7·40
Hydrochloric Acid	0·90
Lactic Acid ?	lost.
Phosphate of Lime	2·30

B. In the Filtrate :—

Soluble Salts after incineration	{ Chloride of Sodium Carbonate of Soda Sulphate of Soda }	7·30
Insoluble Salts	{ Carbonate of Lime Phosphate of Lime }	3·90
Oxide of Iron		
Silica		3·90
		<hr/> 25·97

The reporter adds that the nature and quantity of the mineral constituents may vary within certain limits, according to the quality of the water employed for the preparation of the Pepsine, but he does not recommend the use of distilled water.

Use of Fibrine as a Test.—The commission chiefly employed Fibrine from blood as a test for ascertaining the relative values of different kinds of Pepsine. The fibrine for this purpose was prepared at the slaughter-house by beating the fresh blood with a bundle of twigs. The fibrine separates out, and attaches itself to the sticks in filaments. It is separated, and washed until it is free from colour. In this state it would rapidly putrify; it

is therefore preserved in strong brine. It is first put for several hours in water containing a thousandth of hydrochloric acid. This renders it transparent, and causes it to swell to a voluminous jelly-like mass, from which bits of fat, stick, etc. can be picked out. The acid water is then replaced by a concentrated solution of common salt, which again contracts and hardens it. When it is wanted for use, it is taken out of the brine and put into pure water for an hour. It is then squeezed out, and pressed in a cloth until it ceases to moisten it. 100 parts of fibrine thus prepared represent 24 parts of fibrine dried at 100° C., that is to say, a little less than a quarter of its weight.

The preservation of fibrine by salt is not, however, absolute or indefinite. A little gas is disengaged, and butyric fermentation ensues to a slight extent.

The report closes with a series of "Conclusions," of which we give some.

Most of the dilute acids, and notably hydrochloric, lactic, and tartaric acids act on fibrine, swelling it and dissolving it either wholly or in part; the solution so obtained always gives with nitric acid a white curdy precipitate. The gastric juice of the dog, collected under good conditions, and put in contact with moist fibrine in the proportion of 25 parts of gastric juice for 6 parts of fibrine, causes it to swell slightly at first, and then transforms it into two substances—one insoluble, constituting a non-cohesive deposit at the bottom of the liquid, and representing about one-fifth of the fibrine employed; the other soluble, and the solution not precipitated by nitric acid in the cold.

Official Pepsine, dissolved in water, acts on fibrine as gastric juice does, transforming the larger portion of it into a soluble substance, which is not precipitated by nitric acid in the cold.

Nitric acid therefore affords the means of discriminating between the solution of fibrine in dilute acids, and its solution by gastric juice or by Pepsine.

Official Pepsine is of variable composition; its value must therefore be determined by titration. This is done by ascertaining how much is necessary to completely transform 6

grammes of fibrine, care being taken always to operate under the same conditions of dilution, acidity, temperature, and time, which are indicated in the report.

Official Pepsine is the basis of a well-known pharmaceutical preparation, in which the Pepsine is brought to a pulverulent state by the addition of starch. 1 gramme of this powder should transform 6 grammes of fibrine. The acidity of this preparation is made constant by the addition of tartaric acid.

Official Pepsine brought to the consistence of a firm paste, and enclosed in covered vessels, has preserved all its activity for two years; the mixture with starch has done the same. (Journ. de Pharm. Aug. 1865.)

Pepsine. (Kofmann.)

A commission appointed to examine the Pepsines sold by different makers have given the following conclusions:—

1. Pepsine is a body which possesses the property of coagulating milk, of dissolving fibrin, and other albuminous matters.
2. The quantity of pepsine necessary to coagulate a definite quantity of milk is dependent upon its purity. 25 milligrammes of pure pepsine suffice to produce this result in 100 grammes of milk heated to 40° C.
3. There are sold products under the name of pure or neutral pepsine which are neither pure nor neutral.
4. The addition of starch appears to exercise no conservative influence on pepsine.
5. Pepsine may be preserved pure, according to M. Kofmann, in gelatinous capsules, and, according to M. Domerc, when associated with equal parts of vegetable charcoal. (Journ. Chim. Méd. p. 628, 1865.)

Extract of Meat from Jerked Beef. (Symes.)

From a number of experiments he has made, Mr. Symes has come to the conclusion that Extract of Meat cannot be well prepared from Jerked Beef. He found that the extract made from

this beef smelt good, but was not full-flavoured as in the case of that prepared from the fresh meat. It had a peculiar bitter taste, arising probably from some action of the salt on the meat during its transit. (Pharm. Journ. vii. p. 322.)

Extractum Carnis, containing Albumen. (Horn and Toel.)

The authors prepare an extract of meat which retains the albumen. They macerate one pound of meat with eight drops of hydrochloric acid and one pound of water; after straining, they add twelve drops more of acid, *and no salt*, and are able to evaporate at nearly 212° F., with agitation, with coagulating the albumen. The salt is added to the extract when cooled to 100° F. (Wittstein's Vierteljahr. für Pharm. vol. xiv. p. 359.)

New Process for making Fluid Extracts. (Spencer Thomas.)

This invention relates to an improved process for producing that class of extracts which are made so that a certain amount of liquid shall represent, pound by pound, medically the same quantity of crude drug, and which are generally obtained by extracting with a large excess of liquid and evaporating down to the desired strength. The great disadvantage of the old process is the inequality in strength of the product in consequence of the varying strength of alcohol, and of its unequal action upon the drug.

These objections are obviated by Mr. Spencer Thomas's process, which is patented in the United States, and which is as follows:—First weigh off a quantity of the drug, and the same quantity or weight of the menstruum or liquid by means of which the extract is to be made, a little more of the menstruum being required, as a little moisture is left in at the last pressing.

The drug being ground to proper fineness, is then dampened with a small portion of the liquid, and subjected to a heavy pressure (say from 800 to 1000 tons), whereby all the liquid, or nearly so, together with such parts of the drug which have dissolved in the same, is expressed.

A fresh portion of the liquid is then sprinkled over the drug, a little time being allowed for the liquid to dissolve the soluble parts of the drug, and the same process of pressing repeated until the whole quantity of liquid is used up and the drug completely exhausted, and the required measure obtained.

By this process an extract is obtained which represents, pound by pound, the crude drug. The drug is perfectly extracted, and the menstruum preserves its original strength throughout, so that the same is capable to retain in solution all those parts which are dissolved during the various stages of the process.

The tedious and expensive process of evaporation is dispensed with, and the patentee considers that concentrated fluid extracts of any description can be produced cheaper and better than by any process heretofore applied; and as the application of heat is entirely avoided, the preparation does not receive the injury by heat that all such preparations are liable to, and furthermore, the change thereby of strength of solvent is avoided. (Chem. News vol. xi. p. 151.)

Medicinal Virtues of *Extractum Jalapæ*, U. S. P. (Taylor.)

In answer to the query published by the American Pharm. Assoc.:—"Does the aqueous extract, prepared from jalap that has been previously extracted by alcohol, possess any medicinal properties; or does the alcoholic extract of jalap fully represent its virtues?" Mr. A. B. Taylor states that he prepared an extract, and subjected it to experiment. He took 30 grs. at 10 A.M.; at 12 A.M. no action having been produced, he repeated the dose. This dose was repeated every hour until eight doses were taken—no apparent effect being produced from a total dose of 240 grains.

From this experiment it would appear that "*Extractum Jalapæ*," U. S. P., is an unscientific preparation. (Proceedings Amer. Pharm., 1865.)

Resin of Jalap, B. P. (Haselden.)

Whilst preparing Resin of Jalap according to the B. P., Mr. A. F. Haselden's attention was directed to several points worthy of consideration. He thinks that the officinal process might have been carried further than it is, and that the brown resin obtained by exhaustion, distillation, and washing, should have been rendered colourless by digestion with animal charcoal, and thus have represented pure resin, or the jalapin of commerce. Mr. Haselden thinks, however, that by the use of animal charcoal some of the acrid principle, upon which the activity of jalap as a cathartic depends, may be removed, and thus the therapeutic value of the preparation diminished.

Christison and Pereira entertained the opinion that worm-eaten jalap was the best for the preparation of the resin. Duncan, Thornton, and Brande, however, recommend the use of the sound drug. From experiments made, Mr. Haselden could not coincide with either opinion. He took two portions of jalap-root, the one worm-eaten and the other sound. The worm-eaten gave one ounce of resin from eight ounces, or 12·5 per cent.; and afterwards, by boiling with water, one ounce of soft aqueous extract: the sound jalap yielded, from the same quantity, one ounce and a half of resin, or nearly 19 per cent., and two ounces of the aqueous product. Thus, though a wholesale manufacturer might use the worm-eaten for the preparation of the resin, seeing that it would not command a ready sale for tincture, yet the pharmacist would prefer the sound root.

Mr. Haselden also adverted to the fact that Tampico jalap was offered at a less price than Vera Cruz; and the question arose as to whether the former would yield as good a product as the latter. His experiments proved that the same quantity of resin (19 per cent.) was obtained from Tampico root as from the Vera Cruz sound root, but only 10 per cent. of the aqueous extract. It was also found that the resin could not be so well prepared with methylated spirit as with pure spirit, the resin tenaciously retaining the unpleasant methylic odour.

Mr. Haselden has also come to the conclusion that concentrated sulphuric acid is not a distinguishing test between jalap and scammony resin, the rose colour produced being so similar that it would be impossible to tell the one from the other. (Pharm. Journ. May, 1865.)

Preparation of Tinctures. (Ronayne.)

The author is convinced that the best way of obtaining the active ingredients of such plants as valerian, digitalis, buchu, ergot, etc., in fact, plants containing fixed or volatile oils, is by a double process, first of alcoholic extraction, then of aqueous maceration; thus, he first infuses the plant in absolute alcohol, after a time expresses and filters; in this way the oils, resins, etc. are obtained. He then macerates the residue in boiling water, which dissolves out the gums, salines, and extractive matters. He then mixes the two solutions, and thus procures a pure certain solution of the essential constituents of the drug. (Dub. Med. Press, Oct 25, 1865.)

Tincture of Opium. (Gross.)

With a view of obtaining a preparation of opium containing only half as much alcohol as the officinal tincture, or just sufficient to act as a preservative agent, Mr. Gross adopted the following process:—Opium was first grated fine, put into a vessel, hot water poured over it and allowed to macerate for twelve hours. It was then transferred to a percolator, and treated with water until O.iss had passed. The percolation was necessarily very slow. After this quantity of liquid was obtained, half a pint of alcohol, sp. gr. .835, was added, and the whole filtered. The result was a clear tincture, not quite so dark as the officinal, but possessing all the desirable qualities of that preparation. Quantity, 2 pints. The dregs were carefully tested for morphia, etc., but only traces could be discovered.

This preparation is said to have the advantage of containing none of the disagreeable resino-extractive which is dissolved out

of the opium by the alcohol, and the presence of which is an objection; it is also less disagreeable to the taste. (Amer. Journ. Pharm. July, 1865.)

The editor of the Amer. Journ. Pharm. objects to the use of boiling water, on account of the bassorin-like matter of the opium being taken up.

Tinct. Opii Camph. U. S. P. (Gross.)

Frequent complaints are made of the cloudy appearance of paregoric in cold water, in consequence of the diminished solvent power of diluted alcohol for oil of anise and camphor at a low temperature.

At the temperature of 40° the officinal tincture becomes opaque; but the following form, devised by Mr. Gross, produces a preparation which remains clear, and also forms transparent mixtures with syrup of squills and syrup of ipecacuanha:—

Opium,	
Benzoic Acid,—āā	60 grs.
Camphor	40 „
Ol. Anisi	1 fluid drachm.
Honey	2 oz.
Water,	
Alcohol,—āā	1 pint.
Powdered Pumice, very fine . . .	$\frac{1}{2}$ oz.
Or Carbonate of Magnesia . . .	120 grains.

Macerate the opium with the water and half-pint of the alcohol for seven days, and filter through paper. To this add the honey, and mix thoroughly. Rub the camphor with a little alcohol until it becomes pasty, then add the powdered pumice-stone, and triturate them well together, adding the oil and acid. Mix thoroughly, and add the honey and opium mixture. Then filter, and when all has passed through, wash the filter with 2 ounces of alcohol, and after it has passed, add the remaining 6 ounces of alcohol to the filtered liquid. When carbonate of magnesia is used, the acid should be dissolved in the 6 ounces of alcohol which is added finally. When it is to be prepared

quickly, the equivalent proportion of tinct. opii may be used in place of the opium. (Amer. Journ. Pharm. July, 1865.)

Purified Tincture of Opium. (Deane and Brady.)

Messrs. Deane and Brady, in the course of their paper on 'Microscopical Analysis,' state as follows:—For most purposes the tincture of opium of the Pharmacopœia leaves the physician little to desire, inasmuch as the astringent and other constitutional effects bring with them no ill consequences; but there are still a large number of cases in which individual peculiarity or untoward symptoms forbid the use either of opium itself or of its tincture, and in these a solution, containing the sedative principle, free from the stimulating properties of narcotine, and the irritating effects of the oleo-resin, becomes a desideratum, and we offer the following formula as likely to supply these requirements. Though there may be some drawbacks to its use in the necessarily tedious mode of preparation, we can, through the kindness of several medical friends, who have used the preparation largely, speak with confidence of its medicinal efficiency.

Purified Tincture of Opium. (Strength of P.L. 1851.)

℞ Dried Opium . . 96 oz. (tr.)
Sp. Vini Rect. . . 2 gall.
Distilled Water . . q. s. to make 8 gall. of Tincture.

Exhaust the opium with cold distilled water, evaporate the solution to the consistence of soft extract, and redissolve in 4 gallons of distilled water. Set this solution aside for a few hours, until all feculence has subsided, then filter, and again evaporate to the consistence of treacle, and add carefully and gradually the whole of the spirit. When the gummy matter has perfectly subsided, pour off, and add as much distilled water as will cause the whole to measure exactly 8 gallons. (Proc. Pharm. Conf., Pharm. Journ. Oct.)

Ipecacuanha Wine. (Johnson.)

Mr. G. Johnson has investigated the following question:—What is the nature of the deposit in Ipecacuanha Wine, and how is it affected by the nature of the wine used? He states:—Willigk has recently discovered in ipecacuanha an acid, which he calls ipecacuanhic acid. It very much resembles gallic acid in its characters, so much so, as to have been mistaken by Pelletier for that acid. It is probably combined in the root with the emetina, which is the active principle, forming with it a salt, soluble to some extent in water, but more so in alcohol. It is this compound of ipecacuanhate of emetina to which ipecacuanha wine owes its medicinal activity, and which we are therefore interested in preserving from alteration or loss. The remaining constituents of the root need not occupy our attention, as they probably play no part in the change to which this preparation is subject. What is the nature of the deposit in ipecacuanha wine? Under the microscope, it is seen to consist in every case of two distinctly different substances mixed together, in proportions varying according to the nature of the wine which has been used. One of these is a yellowish, transparent, granular mass, totally destitute of any trace of crystallization, and presenting an appearance very like that of minute starch-granules; of this I shall speak again. The other is in large white well-formed prismatic crystals, evidently bitartrate of potash derived from wine. In most of the samples, the bitartrate was estimated to amount to as much as 50 per cent. of the whole deposit; in others, to not more than 20 per cent. The relative proportions of the two constituents of the deposit were not, in any case, determined by weighing, on account of the small quantity procurable.

On submitting it to chemical examination, the observed reactions proved that the deposit in every case, from whatever sample of wine the preparation had been made, was qualitatively identical. It was found to be insoluble or nearly so, with the exception of course of the bitartrate of potash. Alcohol partially

dissolved it, and the portion insoluble in that menstruum dissolved entirely in dilute hydrochloric acid. To obtain it in the form of solution for examination, it was treated with alcohol mixed with a few drops of strong hydrochloric acid. This dissolved all but the bitartrate of potash, and the solution gave the following reactions:—Being carefully neutralized with ammonia, tincture of galls produced in it the unmistakable grey-brown precipitate, tannate of emetina.

Solution of iodine produced a yellow precipitate, hydriodate of emetina. Excess of ammonia gave the ruddy-brown coloration characteristic of ipecacuanhic acid, when combined with alkalies. Tincture of sesquichloride of iron produced an olive-green coloration, and sometimes a precipitate of the same colour, ipecacuanhate of iron. Answering in a uniformly similar manner to these tests in every case, the deposit was found to consist of the only important ingredient in the ipecacuanha root or wine, viz. ipecacuanhate of emetina, but mixed in varying proportions with bitartrate of potash. It may be asked here—as the deposit is so uniformly identical in every sample prepared with whatever kind of wine, some influence, acting with equal uniformity, must be the cause of the deposit; what is that influence? The answer in my opinion is, oxygen acting upon and absorbed by the ipecacuanhic acid.

Mr. Johnson finds practically that the wines of France and Germany, which contain much acid and little alcohol, are the best suited for making ipecacuanha wine, as they furnish the least deposit. He finds that a tincture of ipecacuanha, made with proof spirit only, will deposit the ipecacuanhate of emetina. A tincture, however, prepared with a mixture of rectified spirit and water, containing only 20 per cent. of the former, but containing also 4 grains of tartaric acid to the fluid ounce, furnishes, if any, only a very small amount of deposit. (Proc. Pharm. Conf., Pharm. Journ. Oct. 1865.)

Spiritus Chlorato-æthereus.

Mix in a retort $\frac{3}{4}$ of a part of finely-powdered bichromate of potash and 1 part of commercial hydrochloric acid. To this carefully add, so as to mix as slightly as possible with the acid, 16 parts of the strongest spirit of wine. Apply heat, and distil 14 parts. Reject the first ounce, the remainder will be free from acid, and show, on the addition of nitrate of silver, only a trace of chlorine. (Neues Jahrb. für Pharm. Feb. 1865.)

Spirit of Nitrous Ether and Nitrite of Soda. (Warington.)

Mr. Warington, in the course of a valuable paper on Sweet Spirit of Nitre, writes as follows respecting the manufacture of Nitrite of Soda of the British Pharmacopœia, and the spirit to be obtained from it :—

My next experiment was to substitute for the charcoal an equivalent amount of carbon in the form of starch, and this has yielded us the most satisfactory results, and with very little trouble. Seven parts of dried nitrate of soda in fine powder is mixed with one of starch powder, and thrown by small quantities at a time into a shallow iron pan heated from below ; the mixture spumes and melts as the water and carbonic acid pass off, and the salt ultimately fuses. When it has become quite white, it is laded out and cooled. We have already made between three and four hundred pounds weight by this process, and without any annoyance from deflagration, the heat of course being carefully regulated. In these operations we have always employed iron vessels, as the metal vessel relieves us from the annoyance of loss arising from leakage or fracture of the earthen crucible and the small quantity of oxide of iron that is found mixed with the product, cannot in any way interfere with the after process. The spirit of nitre that has been produced from nitrite of soda thus prepared has yielded us, by the chloride of calcium test, 5 per cent. of separated nitrous ether, or 13 per cent. as a whole ; and in consequence of this steady yield, we have been obliged to reduce the proportion of nitrite used in our

manufacture to meet this excess of strength ; the British Pharmacopœia ruling that the spirit is to yield $1\frac{1}{2}$ per cent. of nitrous ether when submitted to the test, or a total content of 9·5 per cent.

Assuming the specific gravity of the nitrous ether separated by the chloride of calcium to be ·899, as stated by the Edinburgh College, or ·900 as stated in the Dublin Pharmacopœia of 1826, the proportion of nitrite of soda directed by the British Pharmacopœia should yield, if pure, a spirit of nitrous ether containing 17·25 per cent. The above result, 13 per cent., would imply a percentage of nitrite of soda in the salt used equal to 75·34, a conclusion which has been further confirmed by the amount of nitrogen gas evolved by decomposing the salt with chloride of ammonium. On the same basis of calculation it would require the nitrite of soda used to contain 55·07 per cent. of real nitrite in order to produce the strength specified by the British Pharmacopœia, and 46·32 to bring the mixture of spirit and test liquor up to the point of saturation, or 8 per cent.

Since the appearance of the British Pharmacopœia, I have again procured samples of spirits of nitre from several of our leading manufacturers, but in no case have I yet found sufficient nitrous ether present to yield any indication by the test. In fact, it has been admitted that a salt containing 25 per cent. of real nitrite is the best product that has been obtained by the process of deflagration. (Pharm. Journ. July, 1865.)

Falsification of Kirsch. (Boudet.)

Attention has been drawn to the fact that an imitation of kirsch, made from cherry-laurel water, is frequently sold in France in place of the true liqueur. True kirsch is made by crushing wild black cherries, leaving them with their stones to undergo fermentation, and then distilling ; an aromatic spirit is thus obtained, containing hydrocyanic acid. False kirsch is made, according to M. Méro, by mixing equal volumes of alcohol (33° Cartier) and cherry-laurel water. Sometimes one-half of the cherry-laurel water is replaced by *eau de marasque*.

M. Boudet has examined comparatively the true and false liqueurs, and has shown that the false may be readily detected by its possessing the characteristic odour and taste of cherry-laurel, and also by the fact that it always contains a much larger percentage of hydrocyanic acid than the true kirsch.

He gives first the result of the examination of six samples of true kirsch of different origins :—

	Alcubometric degrees.	Hydrocyanic Acid in 100 grammes.
1. Furnished as a type of good quality .	50° Cent.	4 milligr.
2. Kirsch of commerce, Paris	48° „	5 „
3. Do. do.	49° „	3 „
4. Do. do.	46° „	3 „
5. Kirsch from Fougerville, 1864 . . .	48° „	7 „
6. Prepared by Boussingault at Lieb- frauenberg.	52 „	10 „

The amount of alcohol, it will be seen, varies from 18° to 20° Cartier, and the hydrocyanic acid from 3 to 10 milligrammes in 100 grammes.

Two samples of false kirsch prepared by the processes described gave the following results :—

	Alcohol.	Hydrocyanic Acid in 100 grammes.
1. Cherry-laurel water and Eau de Marasque	52°	12 milligr.
2. Cherry-laurel water alone	50°	22 „

M. Boudet considers that kirsch should never contain more than 10 milligrammes of hydrocyanic acid in 100 grammes of the liqueur. (Journ. de Pharm. Jan. 1865, p. 33.)

Liquor Ammoniae Acetatis, U. S. P. (Byrnes.)

It is very difficult to find specimens of liq. ammon. acetatis that do not contain either too much alkali or too much acid. The latter is the lesser evil of the two. It is most desirable to get it in a neutral state. The author thinks this is somewhat difficult, and that the modes usually recommended cannot be

relied upon. He uses the following methods, having found them to yield perfectly satisfactory results :—

1. Neutralize the acetic acid with carbonate of ammonia before diluting it with water. By adding carbonate of ammonia to undiluted acetic acid, the point of saturation is easily determined. This plan gives a concentrated solution of the acetate, which dissolves the carbonate but very slightly after it is once saturated, and no carbonic acid is held in solution. When making it from undiluted acetic acid the carbonate may be added until effervescence ceases, and then dilute it with pure water free from lime.

2. Neutralize dilute acetic acid with aqua ammoniæ to half its usual strength, allowance being made for the water of the ammonia. After the acid is thus diluted, carefully add the carbonate of ammonia, until the solution is neutral to test paper, and dilute it to proper strength.

If the preparation is to be kept, add a few drops of acetic acid, or free carbonate of ammonia will be generated, and the mixture becomes alkaline. (Med. and Surg. Reporter, July 15, 1865 ; Amer. Journ. Pharm. Sept. 1865.)

Mistura Creasoti of the British Pharmacopœia. (Tuck.)

Mr. Tuck believes, that the formula given for this preparation requires to be further investigated, for if, as stated by Pereira and others, creasote is soluble in water to a greater extent than the proportion in which it is ordered in the *mistura creasoti*, what need of adding acetic acid to dissolve it?

He finds practically, that the acetic acid is entirely useless, as the quantity of creasote ordered is perfectly soluble without the presence of acetic acid or any other solvent, and even if it were not so, the acid would be still useless in that small proportion, as the creasote is thrown down from it again on diluting it with the water. He adds, that if the spirit of juniper has been ordered as a flavouring, and to cover the taste of the creasote, it is by no means the best that could have been chosen ; it has the disadvantage of making the mixture milky at first,

(which, however, will become clearer on being allowed to stand for a day or two by the finely-precipitated oil of juniper coalescing and floating on the surface in the form of very small globules), and also renders the mixture far more likely to disagree with the patient in the class of affections for which creasote is generally administered. For these reasons, Mr. Tuck suggests the following form, as a decided improvement:—

Creasote	16 minims.
Syrup of Orange Flower . .	2 ounces.
Distilled Water	14 ounces.

Mix the creasote with the syrup, then gradually add the water, shaking the mixture after each addition.

It will be seen that the suggested formula contains the same amount of creasote as that of the British Pharmacopœia, that is, one minim to the fluid ounce. Two drops will be found as near as can be equal to one minim. (Proc. Pharm. Conf., Pharm. Journ. Oct. 1865.)

Mistura Ferri Co. B. P. (Hanbury.)

Mr. Daniel Hanbury suggests a few alterations in this preparation, worthy of notice. He thinks that the myrrh should not be in powder, as the long desiccation required for reducing it to that state deprives it of much of its aroma. A piece of fine lump myrrh answers much better. According to the B. P., each fluid ounce of the emulsion requires $3\frac{3}{4}$ grains of sulphate of iron; this should be reduced to $3\frac{1}{2}$ grains to the ounce. The formula would then stand thus:—

Mist. Ferri Comp. ℞. Ferri Sulphat. grs. 70; Potass. Carb. grs. 60; Myrrhæ Sacch. āā drms. $2\frac{1}{2}$; Sp. Myrist. fl. drms. $2\frac{1}{2}$; Aq. Rosæ. q.s. Triturate the myrrh and carbonate of potash with the sugar, sufficient to form a thin paste. Set this aside for twelve hours; then continue the trituration, gradually adding rose-water and the spirit of nutmeg, so as to form 20 fluid ounces of a uniform emulsion, which preserve. When required for use, add the sulphate of iron, in the proportion of $3\frac{1}{2}$ grains to the fluid ounce. (Pharm. Journ. August 1865.)

Solubility of Camphor in Water. (Markoe.)

Storer, in his 'Dictionary of Solubilities,' states that water takes up three times as much camphor from its intimate mixture with carbonate of lime or magnesia, than when shaken with camphor alone (assuming it to be a fact that, in the latter case, but one part of camphor is taken by 1000 parts of water), making the limit of solubility one part of camphor to $333\frac{1}{3}$ parts of water.

Mr. Markoe, in experimenting upon the aqua camphoræ of the U. S. P., found the solubility to be 1 part of camphor in 240 parts of water. He thinks that the preliminary trituration of the camphor with alcohol, previous to its mixture with carbonate of magnesia, will explain the greater solubility. (Proceedings of the Amer. Pharm. Assoc. 1865.)

The Waters of the Pharmacopœia. (Pooley.)

Mr. Pooley undertook an investigation of the following questions:—

"Distilled waters: should these be prepared from the raw material or from the essential oil?"

"Can any be prepared without distillation?" (which sounds rather paradoxical).

"What are the advantages and disadvantages of the addition of spirit to, and of the retention of, the excess of oil in contact with them?"

Upon the subject of camphor water he states:—

I think I am right in saying that the general impression is it contains a homœopathic quantity of camphor when made according to the Br. Ph. In order to arrive at some conclusions as to the quantity of camphor dissolved in the Br. Ph. process, I cut carefully and weighed exactly 120 grains of fresh camphor divided into four pieces, put them in muslin, with a glass weight to sink it, into a half-gallon bottle of distilled water, corked and left it for two days. I then withdrew the pieces of camphor, carefully dried them with blotting-paper, and weighed them; they had only lost 6 grains. I then re-cut them into about

twenty pieces, put them again in muslin into the bottle, let it stand five days, shaking occasionally, and at the end of that time the dried camphor only weighed 100 grains; thus by the first process only $\frac{1}{20}$ th of the gum was dissolved, by the second $\frac{1}{8}$ th part. I think this is sufficient to show a necessity for more definite instructions than those of the Br. Ph.

The following are the conclusions at which he arrived:—

The name "*distilled waters*" is not applicable to the whole of the waters of the Br. Ph. The term "*waters*" would be so, and would suffice. No one process is best adopted for the preparation of every water. In the case of dill, caraway, cinnamon, fennel, peppermint, spearmint, and pimento, a more uniform and stable product can be obtained by triturating the oil with precipitated chalk, than by distillation. For rose and elder-flower water, distillation from pickled flowers is the best in our climate. For camphor water, a more definite plan, embracing more minute division and longer maceration is desirable. For cherry-laurel water, frequent distillation and the product standardized according to Mr. Draper's suggestion, is the best when it is practicable, but in other cases, a solution of hydrocyanic acid of a suitable strength is preferable to a deteriorated article. Lastly, the addition of spirit in small quantity to these waters is condemned by experience, as not preventing but increasing the tendency to form acetic acid. (Proc. Pharm. Conf., Pharm. Journ. October 1865.)

On Mucilago Tragacanthæ, B.P. (Hanbury.)

As made by the B. P. process, Mr. D. Hanbury thinks this preparation too thick, while at the same time twenty-four hours is a longer time than can generally be allowed for preparing it. He recommends the following in preference to the officinal form:—

Mucilago Tragacanthæ. *R.* Gum tragacanth pulv. grs. 60; Aq. destill. fluid ounces 10. To the water contained in a pint bottle add the tragacanth, agitate briskly for a few minutes, and again at intervals until the gum be perfectly diffused, which will occur in about five or six hours. (Pharm. Journ. October 1865.)

Syrup of Smilax. (Donovan.)

Mr. Donovan believes that a considerable mistake exists in the directions of the B. P. for making this syrup. He found by trial that if 4 ounces of carefully-dried smilax-root be infused for four hours in 20 ounces of boiling water, and then strained without pressure, the strained infusion will measure 6 ounces. If to this be added 28 ounces of sugar, the weight of the whole must necessarily be 34 ounces; but the Pharmacopœia says the syrup must weigh 42 ounces, which is impossible, if it be admitted that the resulting infusion measures but 6 ounces and weighs very little more,—a statement easily disproved if untrue. The weight of the smilax itself, added to the weight of the syrup, makes that of the B. P. 42 ounces. (Medical Press, March 15, 1865.)

Syrup of Red Poppies, B. P. (Donovan.)

Mr. Donovan considers the addition of spirit as directed by the B. P. to be not only unnecessary but injudicious. The presence of the spirit tends to promote crystallization by exerting an affinity to the fluid, and of course weakening its affinity to the solid which it holds dissolved. (Medical Press, March 15, 1865.)

Best Excipients for Forming the Resins in Jalap and Scammony in Pills. (Hasselby.)

A doubt having been stated as to the applicability of these resins being formed into pills, the question was undertaken by the writer for examination. The following are his experiments:—

Resin of Jalap.

First experiment:—23 grains of resin treated with glycerine. The mass crumbled, afterwards agglutinated, and the glycerine exuded. It weighed, after having been placed on paper, and then scraped off, 28 grains. Estimated loss of glycerine on paper, 2 or 3 grains. 2 grains starch added. After mixing up

it did not roll well, the glycerine still exuded. The weight was 29 grains, and the pills lost shape and became flat.

Second experiment on 20 grains of resin :—Fresh mucilage (P.L.) was used. It made up well. The weight of pills after rolling, etc., was 24 grains, the mortar being carefully cleaned of mess. Estimated amount of mucilage used, 6 grains.

Third experiment :—To 20 grains of resin and 3 grains of powdered Castile soap, three drops of water were added. The weight of mass from the mortar was 25 grains. Lost shape, but afterwards became firm.

Fourth experiment :—To 20 grains of resin and 4 of soap, 3 drops of spirit of wine were added. The weight of the mass was 23 grains. It did not keep its shape after being rolled out.

Fifth experiment :—To 20 grains of resin 4 drops of spirit of wine were added, and the mass rolled out quickly. The pills took form easily, and retained it.

Patent Scammony.

First experiment :—To 20 grains of resin 4 drops of mucilage were added. The mass was too soft, it lost shape. On being worked on a warm slab, and then rolled off, the pills took a good shape, which they have since retained.

Second experiment :—To 20 grains of resin 3 drops of spirit were added. It worked up easily, was rather soft at first, but then hardened, and is keeping its shape well.

As these two experiments succeeded so well, no others were tried. (Proc. Pharm. Conf., Pharm Journ. Oct. 1865.)

The Solidification of Balsam of Copaiba by Lime or Magnesia. (Roussin.)

It has been noticed that specimens of Balsam undoubtedly genuine will not solidify with one-tenth of their weight of calcined magnesia (the quantity described in the Paris Codex), whilst apparently adulterated balsam solidifies in a few hours. M. Roussin's experiments show the necessity of the interaction of water to bring about the combination of the resin of the

balsam and the alkaline earth. He thinks this is not surprising, as it is the ordinary condition of the combination of acids and bases. On adding balsam containing no water to hydrate of lime, no solidification took place; but upon shaking the balsam up with water and then decanting, it was found that it had absorbed enough water to induce solidification. Calcined magnesia generally contains a sufficient quantity of moisture to induce this reaction.

Practically the best mode of rendering the balsam apt of solidification consists in agitating it some time with about one-twentieth of its weight of water. It is then allowed to repose for some hours at an elevated temperature, and the supernatant hydrated balsam is then examined. (*Journ. de Pharm.; Dub. Med. Press, Sept. 20, 1865.*)

Emulsions. (Barnard S. Proctor.)

Mr. Proctor, in this paper, carefully and philosophically examines the physical questions involved in the production of emulsions. (*Proc. Pharm. Conf., Pharm. Journ. Oct. 1865.*)

Ointment of the Yellow Amorphous Oxide of Mercury.
(Hofmann and Pagenstecher.)

For use in an ophthalmic ointment the authors prefer the amorphous or yellow oxide of mercury, prepared by the wet method by precipitation, to the ordinary crystalline red oxide, or red precipitate. The efficacy of the latter depends, in a great measure, upon the fineness of its powder; this, however, greatly varies, and hence preparations in which it is used are of unequal strength. For obtaining a preparation uniform in its effects, and in the finest possible state of division, the yellow precipitate is highly recommended. In the precipitation of the yellow oxide, care must be taken to obtain a pure oxide, and not any of its compounds, to which precipitates of mercury have a great tendency.

In making the ointment, the authors give preference to mixed

fats as a vehicle (as cold cream), only omitting the water which favours rancidity, and substituting for it quantities of almond oil, varying according to the heat of the weather; or a mixture of cacao-butter and almond oil, likewise proportionate to the temperature. The strength of the ointment should be 1 drachm of oxide to 1 ounce of fat. The following are the two formulæ used by the authors:—

1. *R. Hydrarg. Oxydat. flavi 30 grs.*
(Via humida parati)
Ung. Cetacei ½ oz.
Misce exactissime et fiat unguent.
2. *R. Hydrarg. Oxydat. flavi 30 grs.*
(Via humida parati)
Ung. Cetacei 1 oz.
Misce exactissime et fiat unguent.

(Ophthalmic Review; Chem. News, July 28, 1865.)

Ointment of Red Oxide of Mercury. (A. B. Squire.)

In the ointment of red oxide of mercury B. P., nitric oxide of mercury is directed to be used. Mr. Squire advocates the use of the precipitated oxide in preference; he assigns, as advantages, that supposing ointments of equal therapeutical value to be used, greater economy is gained by the use of the precipitated oxide, since a less proportion of it will suffice in the same quantity of ointment; that, when nitric oxide is used, the application of the ointment to the skin leaves a quantity of the scales of the salt upon the skin, while, at the same time, a different action is produced to what is sought for when an ointment of red oxide of mercury is employed.

Ointment made from precipitated oxide possesses the advantage of a perfectly smooth appearance; and its application is free from the inconvenience of gritty particles and red scales left upon the skin of the patient, as well as possessing superior efficacy. (Pharm. Journal, April, 1865.)

Ointment of Red Oxide of Mercury. (Barber.)

Mr. T. A. Barber objects to the form of the B. P., on the ground that the resulting ointment, although of a good consistence, becomes discoloured and rancid by keeping. He proposes the following form, by which he has made an ointment that remains after four months as good as when first prepared :—

Hyd. Nit. Oxidi	1 oz.
Cer. Flavæ	2 oz.
Ol. Amygdalæ	6 oz.

Misce; fiat unguentum.

This recipe gives an ointment which is far superior to the B. P. form; discoloration and rancidity being chiefly due to the white wax and lard in the latter. (Pharm. Journ. vii. p. 305.)

The Citrine Ointment of the B. P. (Donovan.)

There is no known formula for preparing citrine ointment, which will always present the same appearance and possess the same properties, and a very short time is adequate to induce changes to a certain amount. If its colour be ever so bright a yellow at first, it soon becomes dull, and in process of time becomes slate-coloured. These changes are induced by the gradual decomposition of the mercurial nitrate and evolution of the oxide. If the decomposition be assisted by heat, the oxide is not only evolved but decomposed, and vapour of mercury is freely discharged.

Mr. Donovan found these changes take place in a remarkable manner when he repeated the process of the British Pharmacopœia. When the hot mercurial solution was poured into the hot lard and oil, and well stirred, an effervescence was excited, which would soon have overflowed, but that the vessel was (as the Pharmacopœia directs) capable of containing six times the volume of the ointment. During this violent effervescence the colour of the liquid became continually darker, until the effervescence having ceased, the ointment was found to be of a dark mahogany colour. When perfectly cold it did not solidify, but remained of the consistence of treacle, and might be poured from

one vessel to another. The bottom of the vessel in which it was made was found to be lined with reduced mercury. In four months after, the ointment had attained the consistence of butter in the hot days of summer.

Mr. Donovan thinks the process of the British Pharmacopœia a failure. From experiments he has made, he is led to believe that the degree of chemical action, as evidenced by the activity of the effervescence when the ingredients are mixed, is the main point to be attended to. If the ingredients be mixed cold, and the temperature maintained at a low degree, the ointment will be hard, and of a pale-yellow hue. If the ingredients be mixed very hot, and the temperature allowed to rise with the chemical action, the resulting ointment will be brown, and too soft. Also, when the chemical action has been feeble, the ointment produced will be acrid, and surgeons, to reduce this, dilute it with lard. Mr. Donovan therefore thinks that the strength of the ointment should be reduced one-half. Mr. Donovan concludes by thinking it probably hopeless to expect an unexceptionable process for obtaining a permanent ointment, containing nitrate of mercury in any of its forms. (Dublin Med. Press; Pharm. Jrn. Apr. 1865.)

Unguentum Hydrargyri Nitratis. (Mee.)

Mr. Mee does not coincide with the remarks of Mr. Donovan on this preparation. He points out that the use of yellow wax, as recommended by Mr. Barber some years ago in the 'Pharmaceutical Journal,' would produce a permanently-coloured ointment. Mr. Mee, however, prefers the formula of the P. L. 1851, which, if strictly adhered to, will produce a capital ointment, which will retain its yellow colour for a long time. He gives minute details of the process as carried out by him.

Mr. Mee thinks that the proportions of mercury and nitric acid ordered in the London Pharmacopœia are the same as were originally used in the preparation of this ointment, and should still be adhered to. (Pharm. Journ. June, 1865)

Stavesacre Ointment. (B. Squire.)

Mr. B. Squire, in the course of some researches on the treatment of skin diseases, found the seeds of *Delphinium Staphysagria* to be a most effectual remedy. In preparing an ointment from the powdered seeds, he found that the product was very unsatisfactory in appearance. This, he ascertained, resulted from the considerable quantity of oil contained in the seeds, which prevented their reduction to a fine powder.

With a view of making a more elegant-looking ointment, he had all the oily matter extracted from a given quantity by means of ether; and after this process, the meal-like matter was pounded afresh. This powder yielded a more presentable ointment, which, however, had no medicinal action. He then converted the oil which had been extracted into an ointment, and found it to possess all the activity of the seed.

Another and cheaper mode, he found, was to digest the crushed seeds in hot lard, and afterwards strain; this produced an efficacious ointment, but having the disadvantage of being stained a brown colour. (Pharm. Journ. vol. vi. p. 405.)

Pulverization of Phosphorus. (Blondlot.)

Phosphorus may be reduced to a very fine powder by melting it in a hot concentrated solution of any neutral salt, or even of a syrup, and shaking continually until cold. Phosphorus is reduced to a finer powder in urine than in water. This has been attributed to the presence of urea; but M. Blondlot has proved that it is simply a consequence of the density of the liquid. (Journal de Pharmacie.)

Adulteration of Essential Oils with Turpentine, and the Means of its Detection. (H. Sugden Evans.)

Mr. Evans recommends the use of a polariscope in detecting the adulteration of essential oils, and describes how such an instrument may be constructed. (Proc. Pharm. Proc., Pharm. Journ. Oct. 1865.)

Specific Gravities of Oil. (Donny.)

Two samples of oil are taken, and the specific gravities compared by colouring a small quantity of one oil by means of alkanet root, and allowing a drop of it to fall gently into the other sample. The red globule will either sink, swim, or cling to the surface. An observation of the temperature is not required. (Wittstein's Vierteljahr. für Pharm. vol. xiv. p. 536.)

Quantity of Alkaloid in various specimens of Citrate of Iron and Quinine. (Braithwaite.)

Mr. J. C. Braithwaite gives the results of his examinations of several samples of citrate of iron and quinine. He shows that quinidine is occasionally substituted for quinine. (Proc. Pharm. Conf., Pharm. Journ. Oct. 1865.)

Analysis of a so-called Saccharide of Cod-Liver Oil. (Attfield.)

A proprietary medicine under the title of oleo-morrhaine, or saccharide of cod-liver oil, has recently been imported into England, and sold somewhat freely. Dr. Attfield analysed this preparation and found that it contained no cod-liver oil at all, but was simply powdered milk-sugar. (Pharm. Jrn. vii. 306.)

Preservation of Leeches. (Bevan.)

Mr. Bevan uses an ordinary ornamental leech-jar, changes the water daily, keeping the jar clean by means of a sponge kept for the purpose; the jar is three parts filled with good spring-water, and ten, twenty, or thirty grains of the oxide of manganese, washed and levigated for dispensing purposes, thrown in.

Thirty grains is enough for 100 leeches. (Pharm. Journ.)

Preservation of Flowers with their Natural Colours.

Dried flowers in their natural colours have, for some time past, appeared for sale in the shops. The mode in which the operation is effected is this:—A vessel with a moveable cover is provided, and having removed the cover from it, a piece

of metallic gauze of moderate fineness is fixed over it and the cover replaced. A quantity of fine sand is then taken, sufficient to fill the vessel, and passed through a sieve into an iron pot, where it is heated, with the addition of a small quantity of stearine, carefully stirred so as to thoroughly mix the ingredients. The quantity of stearine to be added, is at the rate of half a pound to one hundred pounds of sand. Care must be taken not to add too much, as it would sink to the bottom and injure the flowers. The vessel with its cover on and the gauze beneath it is then turned upside down, and the bottom being removed, the flowers to be operated upon are carefully placed on the gauze and the sand gently poured in, so as to cover the flowers entirely, the leaves being thus prevented from touching each other. The vessel is then put in a hot place, such for instance as the top of a baker's oven, where it is left for forty-eight hours. The flowers thus become dried and they retain their natural colours. The vessel still remaining bottom upwards, the lid is taken off and the sands runs away through the gauze, leaving the flowers uninjured. (Society of Arts Journal.)

Antidote for Prussic Acid, Antimony, and Arsenic.

(T. and H. Smith.)

Messrs. T. and H. Smith, in a lengthy paper, show that a mixture of ferrous and ferric salts may be successfully employed, together with an alkali, as an antidote for either prussic acid, arsenic, or antimony.

For prussic acid they direct that 1 or 2 drachms of calcined magnesia should be mixed with water and given to the patient; then, immediately following this, should be given a solution containing 16 minims of liq. ferri perchlor. P. B. and $12\frac{1}{2}$ grains of green vitriol. A chemical reaction ought to ensue in the stomach, by which the prussic acid would be completely converted into prussian blue. In the case of cyanide of potassium the magnesia would not be required, but would do no harm. The quantities given are sufficient to neutralize 100 minims of medicinal prussic acid.

To prepare the antidote for Arsenious Acid, the authors direct 5 fluid drachms, 7 minims of Liq. Ferri Perchlor. to be diluted with 2 or 3 ounces of water, and a solution of 1 ounce of cryst. carbonate of soda to be added, stirring till effervescence ceases. This mixture destroys about 10 grains of Arsenious Acid.

The following are the directions for preparing the antidote for tartar emetic:—

Mix 5 fluid drachms, 7 minims of Liq. Ferri Perchlor. with a few ounces of water, then add a cream formed of 90 grains of calcined magnesia, rubbed up with water; stir till, after gelatinizing, the mixture again gets thin; then transfer it to a cloth and press out the liquid; remove the mass from the cloth into a clean mortar, and rub it up with a little water into a smooth cream. In this state it can destroy upwards of 20 grains of tartar emetic. (Pharm. Journ. Oct. and Nov. 1865, p. 139 and 275.)

Construction of a Pharmacopœia. (Redwood.)

In this paper the author discusses the principles upon which a Pharmacopœia should be constructed under the following headings:

1. The arrangement and classification of matter.
2. Language and nomenclature.
3. Weights and measures.
4. Medicines having a claim to recognition in the Pharmacopœia. (Pharm. Journ. May, 1865.)

Inhalation of Atomized Fluids. (Beigel.)

From a very early date, inhalations of vapours have been used in various diseases. Physicians of later date also made use of blowing pulverized medicaments into the larynx in diseases of that organ. In many Continental spas, arrangements are made to create an atmosphere suffused with mineral waters, which the patient is recommended to inhale; this, however, is simply vapour-inhalation.

Jules Giron first constructed an apparatus through which the fluid was subdivided into a fine vapour, which was inhaled by the patient with great benefit. In 1859 Mathieu introduced an apparatus for a similar purpose, which he called a *nephogène*. These apparatus have been in use on the Continent for many years.

But the greatest simplicity in the construction of the inhalation apparatus was attained by Dr. Bergson. He placed two glass tubes, with very fine openings at one end, at right angles to each other; the other end of one tube dips into a vessel, filled with the fluid which is to be subdivided, while the other is fastened to a caoutchouc tube about a yard in length; the middle and the end extended into a ball, so that the one in the middle represents an air-reservoir, and that of the end a pair of bellows. If the latter are pressed by the hands of the patient, the air in the upper ball is compressed, escapes through the fine opening, and causes a vacuum in the other tube; the fluid of the vessel then ascends through aspiration, and is turned into fine mist when leaving the capillary opening. Upon this principle, which is as excellent as it is simple, Siegle has based his inhalation apparatus, putting aside the bellows, which fatigued the hands of the patient very much, and substituting a vapour kettle, into which one of the tubes descended. The vapour issuing forth effects the same purpose as the bellows, and the patient can inhale comfortably.

One inconvenience which all the apparatus had in common was, that the cloud of vapour containing the subdivided fluid not only rushed into the mouth of the inhaler, but moistened also his face. With indifferent medicaments this was only disagreeable; but with liquids of a more acrid or caustic nature—as, for instance, nitrate of silver—it was not only disagreeable by reason of leaving black spots on the face and forehead, but even injurious as a caustic for the eyes.

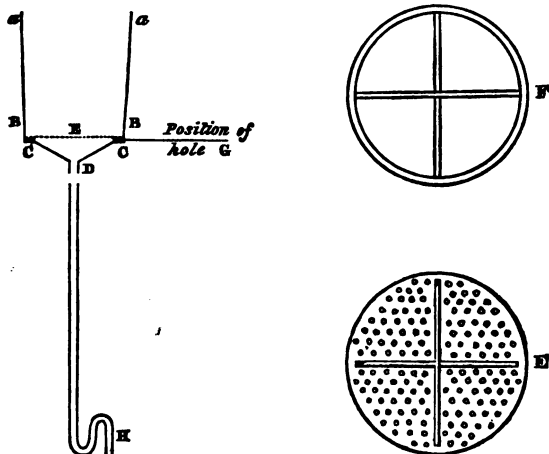
To set aside these inconveniences, Dr. Beigel had a screen constructed, which answers all purposes. It consists of a turned wooden disk, which is hollowed funnel-like, prolonged in

the middle into a mouthpiece with an opening of the size of a shilling. The rim is turned inwards, having on its lowest point a small opening, into which a gutta-percha tube is fixed, the end of which may be put into any glass, and through which the fluid, created by the superfluous steam and subdivided vapour, runs. The disk, fixed by means of an arm to a stand, can be lowered or heightened, and moved in every direction *ad libitum*. The whole apparatus is placed between the inhalation apparatus and the inhaler, who sits comfortably with opened mouth before the mouthpiece of the screen, inhaling the atomized jet through it.

On the principle of Bergson-Siegle's apparatus a great many instruments have been made, but none with an improvement worth describing. (Lancet, July 8, p. 35.)

A New Filter. (Schacht.)

The apparatus of Mr. G. F. Schacht consists of a cylindrical vessel *a a B B* of pure tin, slightly smaller in diameter at the



bottom than at the top. The smaller end is provided with a ledge,

C, from which the bottom slopes to a central spout, D. A perforated plate of tin, E, strengthened at the under side by cross pieces of the same metal, rests upon the ledge. A ring of tin, F, a quarter of an inch thick, strengthened with cross pieces, is also provided. Upon this ring the filtering-medium, flannel, calico, felt, etc., is stretched, and the whole is placed (medium downwards) upon the perforated plate. The ring should be so contrived as to press the filtering medium tightly against the sides of the vessel, and yet just to rest upon the perforated plate. A small hole, G, is drilled horizontally through the ledge opening into the instrument close under the perforated plate. A tube is then provided of any length from one foot to thirty, and at one extremity is reversed upon itself twice. This tube may be of various materials; but, on the whole, vulcanized india-rubber is the most convenient. In that case the bent piece at the end should be of some solid substance, such as glass.

To put the apparatus into action, stretch the filtering-material over the ring, F, and press it into its place upon the perforated plate, E. Attach the tube to the spout D, and close the extremity, H, with a cork. Pour in the liquid to be filtered. A portion soon passes through the medium and fills the tube, the air escaping through the small hole G. As soon as the liquid begins to escape at this hole, stop it with a little wax; remove the cork from H, and the action commences.

The dimensions of the instrument, and the material of its construction will, of course, vary with the purpose for which it is to be employed. That which Mr. Schacht had made for his own use is of pure tin. It is ten inches high, nine inches in diameter at the larger, and eight inches at the smaller end. The ledge is one-third of an inch deep, and the tube of india-rubber is four feet long. He finds this elastic tube very convenient, for, as the necessity for pressure is not so urgent at the commencement of the process as subsequently, when the filtering-medium has become choked, the operation can be commenced with efficient result by bringing the receiver to within a few inches of the bottom of the apparatus, and the column

can be gradually lengthened, and the effect proportionately increased, by simply lowering the receiver, to each new position of which the elastic tube readily accommodates itself.

With this instrument Mr. Schacht has filtered, to perfect brightness, eight gallons of turbid solution within the hour, and has had the satisfaction of seeing the last ounce pass through almost as quickly as the first. (Proc. Pharm. Conf., Pharm. Journ. Oct. 1865.)

Rate at which different Liquids flow through Siphons.
(Galletly.)

The difference in viscosity of liquids has generally been considered sufficient to account for the different rates at which liquids flow through siphons. Mr. Galletly has found, however, that fluids of the same degree of limpidity pass through siphons at various rates. In drawing off the following liquids from a phial holding a little more than 4 oz., by means of a siphon of somewhat narrow tubing, he found that they flowed at the following rates :—

Water	74 seconds.
Ether	48 „
Bisulphide Carbon	47 „
Whisky, sp. gr. '914 . . .	182 „

The same variations were also found when, instead of a small phial and tube, the ordinary laboratory apparatus was used.

Mr. Galletly came to the following conclusions :—That the narrower the siphon, the greater difference is always found between the rate of efflux of various liquids, and that the same is the case when the long limb of the siphon approaches the level of the short one. The latter fact he illustrated by the following experiments. He took a bottle holding 7300 grains of water, and about $4\frac{1}{2}$ inches deep, the siphon employed being a little over $\frac{1}{2}$ inch bore nearly uniform throughout. He then passed the undermentioned liquids through the siphon at various times, shortening the long limb at each experiment, until it was only $\frac{1}{2}$ inch below the level of the short limb.

		Long limb 18 inches longer than short limb.	9½ inches cut off long limb.	9½ inches more off long limb.
	sp. gr.	Seconds.	Seconds.	Seconds.
Water	1000	49	60	212
Paraffine Oil	826	79	—	516
Boghead Naphtha	765	49	59	221
Turpentine	876	57	79	334
Whisky	914	85	120	515
Petroleum	812	83	—	549
Turpentine and Naphtha, half of each	825	48	64	249

Temp. in all cases 60° Fahr.

Experiments were also made with wide and narrow siphons, adjusted to empty a bottle of water at the same time, to see whether other liquids would also flow through them in an equal time, but the number were widely different. The author also tried the use of long and short siphons, keeping the limbs at the same comparative level in both cases. He promises to renew his experiments, with a hope of arriving at some satisfactory conclusions. (Amer. Journ. Pharmacy.)

Relation between Drops and the Weight of Liquids. (Taekh.)

The author finds that—

Water, Dilute Acids, Saline

Liquids, Syrups . . . are 20 drops to the scruple (20 grains wt.)

Wines " 30 " " "

Essential Oils " 30 to 70 " "

Proof Spirit, and Tinctures

prepared with it . . . " 44 " "

Rectified Spirit and Tinc-

tures made with it . . " 44 to 46 " "

Concentrated Sulphuric Acid " 40 " "

Dilute " " " 20 " "

Concentrated Acetic Acid . " 30 " "

Dilute " 22 " "

Ether " 70 " "

Chloroform " 55 " "

Acetic Ether " 50 " "

Taekh. proposes that every chemist should make, by experi-

ment, his own list of the number of drops given by given weights of various liquids from his dispensing-bottles. (Wittstein's Vierteljahr. für Pharm. vol. xiv. p. 572.)

Syrupus Simplex, B. P. (Donovan.)

Mr. Donovan made some simple syrup in the month of June with the temperature at 70°, and found that for 40 ounces of water the sugar required was 74, and not 80 ounces, as stated in the B. P. The specific gravity of the syrup was 1·320. From experiments made, Mr. Donovan believes this syrup to be a permanent and unalterable one in all seasons of the year. He considers the B. P. syrup sp. gr. 1·330 to be too concentrated. (Dub. Med. Press, March 15, 1865.)

Blue Pill. (Benger.)

Mr. Benger considers, that the directions of the Pharmacopœia for Blue Pill are somewhat indefinite, viz. rub the ingredients together "till globules are no longer visible." Now, supposing this object to have been accomplished, we have a "blue pill," containing mercury in a finely divided state; but let the mass be still further triturated, and the metal will be yet more finely divided,—it being rather difficult to place a limit to the divisibility of a fluid. Thus, multiplication of particles may be carried on *ad infinitum*, and probably the activity of the pill proportionately increased; it is, therefore, very desirable that some process be devised by which the Pharmaceutical Chemist can make his own pil. hydrarg., and which shall yield a product of uniform composition. By such a process I have prepared some specimens. They are of a beautiful blue colour, and the minute state of division in which the mercury exists in them may be easily demonstrated by suspending a few grains in a glass of water.

The mode of preparation he has adopted, is as follows:—136 grains of chloride of mercury (corrosive sublimate) are dissolved in 4 oz. of distilled water, and the solution raised to the boiling-

point; an ounce of protochloride of tin is then put into a beaker with 2 drms. of hydrochloric acid and 2 oz. of cold water, to which, when dissolved, the mercurial solution is added, and the mixture stirred for a few seconds. The precipitated mercury, in the form of a nearly black powder, is then allowed to subside, washed several times by decantation with dilute hydrochloric acid, to remove any traces of tin, and finally with distilled water. It would, of course, be impossible to dry and weigh this precipitate without causing the excessively minute particles of mercury to unite into one globule; but, as we know that 136 grains of chloride yield 100 grains of metallic mercury, this is unnecessary. The water is then drawn off, as nearly as possible, by means of a pipette; 30 grains of sugar, 100 grains of powdered liquorice, and about 5j of glycerine added, and the mass transferred to a warm porcelain slab, where most of the remaining water is evaporated at a low temperature, a sufficiency of glycerine and liquorice being used to make the mass weigh 300 grains.

A very high temperature is not requisite to produce this change. The solution of the protochloride of tin should be effected without heat, and should not be very dilute, as in either case a basic salt is liable to be thrown down, especially if no hydrochloric acid be present. It is desirable also to employ a considerable excess of the tin salt to ensure the reduction of the mercury; if insufficient be used, only calomel will be formed. The precipitate will be found to vary slightly in colour, according to the temperature at which it is produced, but I think that this being uniform and the solutions of a definite strength, unvarying results may be obtained. The sugar has been added to assist in the preservation of the mercury from oxidation, and the glycerine to prevent the mass from becoming dry. (Proc. Pharm. Conf., Pharm. Journ. Oct. 1865.)

On Cotton-seed Oil, and its Detection when mixed with other Oils. (Reynolds.)

Mr. Reynolds believes that nearly the whole of cotton-seed

oil is used in the sophistication of oils of older repute. The probability that the supply will now continue and increase is especially indicated by a consideration of the source of the oil. The weight of seed yielded by each cotton-plant is about three times as great as the cotton obtained from it, and up to the present time nearly the whole of this seed has been wasted, or returned to the soil as a fertilizer. The present price of the refined oil is less than 3s. per gallon, and, considering the large proportion of seed that has yet to be utilized, it is probable that it will long continue to be the cheapest fixed oil on the market. Hence the desirability of our giving some attention to a substance which is pretty sure to present itself to us in our daily avocations in some shape or other.

After describing the methods of preparing and purifying cotton-seed oil, Mr. Reynolds adds some remarks upon the detection of this oil when mixed with olive oil. A well-known chemist, whom he regarded as the highest authority upon the subject of the adulteration of oils, told him that he did not know of a test for this purpose.

The experiments which he made induced him to regard the nitrate of mercury test as affording sufficiently clear reactions to enable him to find this oil when mixed with olive oil.

He used Pontet's test as follows:—6 parts of mercury are dissolved in $7\frac{1}{2}$ parts, by weight, of nitric acid 1.36 without the application of heat, and form the test solution. The tubes for making these experiments are merely strong test-tubes of 7 inches in length, and holding about a fluid ounce. They are roughly graduated by pouring in 30 minims of water and scratching a line upon the glass; another line is made at the point reached when a total of 6 drachms of water have been poured in. The lower line is marked "test," the upper one "oil." Pour in first the test to its mark, and fill up with the suspected oil to the other line; shake well and set aside, shaking again about an hour afterwards. In from three to twelve hours according to the temperature, etc., a genuine olive oil will have solidified entirely, the product after the latter interval being

quite hard when touched by a glass rod. Cotton-seed oil, when similarly treated, will not solidify, but remains fluid. A mixture of 25 parts of cotton-seed oil with 75 parts of olive oil gives an intermediate condition. The contents of the tube become solid, but if a little be taken out with a glass rod, it is found to be soft, pasty, and without any friable character. On the other hand, when pure olive oil is so treated, the product is hard, friable, and not pasty. Comparative trials should always be made, and caution exercised in accepting the apparent conclusions. Where only $12\frac{1}{2}$ per cent. of cotton-seed oil is present, the reactions are not so distinct as with 25 per cent., but Mr. Reynolds considers them usually sufficient to decide the case. (Proc. Pharm. Conf., Pharm. Journ. Oct. 1865.)

PHARMACEUTICAL FORMULÆ.

Tinctura Iodini Decolorata. (Aikin.)

Tinctura Iodin. Co.,
 Aq. Ammon. fort.,—āā 1 oz.
 Camphor 1 scruple.

Mix. After the camphor is dissolved, let the mixture stand until it becomes colourless.

Dr. Aikin recommends this colourless Iodine as a more efficient absorbent, etc., than the ordinary solution of Iodine (Amer. Journ. Med. Science, Oct. 1865.)

Sedative Belladonna Plaster. (Boulu.)

Dr. Boulu has devised the following plaster, which has met with great success in the treatment of rheumatic and neuralgic pains:—

Emp. Plumbi 16 oz.
 Extract Pini Sylvestris,
 Extract of Belladonna,—āā . . 1½ oz.

Spread evenly, over fine strong linen, so that every square inch should contain 2 grains of the active ingredient incorporated in the plaster. (Union Médicale; Dub. Med. Press, July 26, 1865.)

Medicated Cigarettes. (Bowman.)

Dr. Bowman uses any variety of thick paper, preferring the heavy paper used for copy-book covers (olive pressings), or thick blotting-paper.

The paper is first cut into papers about seven inches and a quarter wide, and the next point is to ascertain exactly how much fluid it requires to saturate twenty-five of these pieces. This is done by soaking them in an exactly-measured ounce of water, when on withdrawal it will be found that about five fluid drachms of the liquid have been imbibed. This affords a key to the strength of the solutions. The slips are next saturated with the remedy, and when nearly dry one border of each is pasted or gummed; they are then rolled round a pencil which is afterwards withdrawn, and the cigarette is complete.

Arsenical Cigarettes.

Boil 25 grains of arsenious acid (the lump broken up is purest) in a Florence flask with 4 ounces of water, down to a quantity required to saturate 100 slips of the paper previous to rolling. They will then contain a grain each. Recommended by Trousseau in phthisis.

Mercurial Cigarettes.

Dissolve 3 drachms of red precipitate in 3 drachms of nitric acid, and add enough water to make up the quantity requisite to saturate 100 slips of paper. They will contain about 3 grains of the nitrate of mercury. In aphonia, offensive discharges from the nostrils, and polypus in the nose.

Nitre Cigarettes.

Dip the paper in a saturated solution of nitrate of potash before rolling. In obstruction of the Eustachian tube.

Balsamic Cigarettes.

Made by giving the dried nitre cigarettes a coating of tincture of benzoin. (Canada Lancet, Aug. 1865.)

The arsenical cigarettes, which are more largely used on the Continent than in this country, are generally made by dipping the paper into a solution of arseniate of soda, each cigarette containing 5 centigrammes of arsenious acid.

Other forms of medicinal cigarettes have been used for several years past.

Sulpho-Arsenite of Quinine. (Marletta.)

Signor Marletta substitutes the above salt for the arseniate of quinine, believing it to be equally efficacious and less dangerous to administer. He employs dose of 5 to 7 decigrammes without dangerous symptoms.

He prepares the salt by saturating to perfect neutralization, a solution of arsenious acid with an alcoholic solution of sulphate of quinine, placing it in a hot-air bath and allowing it to crystallize. He employs the following form:—

Sulpho-arsenite of Quinine . . .	5–7 decigrammes.
Sugar	2 grammes.

Mix, and make 10 powders. One to be taken each hour.
(Rép. de Pharm. April, 1865.)

Pil. Ferri Iodidi. (Bedford.)

Iodine	80 grains.
Reduced Iron	40 „
Water	25 minims.
Honey	30 grains.
Marsh Mallow in fine powder . .	120 „

Rub the iodine in a mortar to a fine powder, adding first the water, the honey, and afterwards the reduced iron in portions, and triturate until the iodine is converted into iodide. Add the marsh mallow, and, having formed a pill mass, divide into 96 pills. Coat them with tolu. (Amer. Journ. Pharm. May, 1865.)

A Permanent Mass for Pil. Ferri Iodidi. (Gross.)

Iodide of iron being so unstable when exposed to air, Mr. Gross proposes the following form for a permanent pill-mass, which may be prepared extemporaneously:—

Iodine	40 grains.
Reduced Iron,	
Powdered Acacia,—āā . . .	10 „
Powdered Sugar	20 „
Glycerine	15 drops.
Powdered Althæa	q. s.

To be made into 50 pills.

Triturate the iodine and the iron thoroughly together, dry, until they are reduced to a fine powder; then add the glycerine, and rub till the fumes of iodine cease to be given off, and the mixture assumes a greenish colour. Then add the acacia and sugar, and lastly, sufficient powdered althæa to bring to a pilular consistence.

The mass should be very stiff. When the pills are formed roll them in *ferri pulv.*, and then coat them with *tolu.* (*Amer. Journ. Pharm.* July, 1865.)

Forms for the Internal Administration of Silver. (Déniau.)

The author has carefully examined all the forms which have been indicated for the internal administration of silver. He finds that most of the formulæ hitherto employed for making pills of nitrate of silver are defective, inasmuch as the nitrate is more or less decomposed. He recommends kaolin or pipe-clay as the best excipients for making nitrate of silver into pills. The pills thus made are easily kept, are porous, and are easily and rapidly penetrated by the liquids of the stomach; and, moreover, the salt is preserved in an unalterable condition.

M. Delioux, some time back, published a form for the administration of silver in solution, combined with albumen. The author has carefully examined this preparation, and recommends it as the most suitable mode for administering silver internally. The solution of M. Delioux was made as follows:—A white of egg is diluted with distilled water, and a solution of a given weight of nitrate of silver is added to it. A white flocculent precipitate is produced. A solution of an equal weight of chloride of sodium is then added; then the precipitate which was formed redissolves, the solution retaining an opalescent tint. This liquid rapidly decomposes if exposed to the light. The author states, however, that it may be kept a considerable time in the dark.

M. Déniau recommends the substitution of bromide of potassium for chloride of sodium. He gives the following forms:—

	Nitrate of Silver. 20 c. c. contain 1 centigr.	15 c. c. contain 1 centigr.
White of Egg	1.	1.
Crystallized Nitrate of Silver	0.50 grm.	0.65 grm.
Bromide of Potassium	1.25 "	1.6 "
Simple Syrup	120.00 "	120.00 "
Peppermint Water	100.00 "	100.00 "
Distilled Water	780.00 "	780.00 "

Dissolve the nitrate of silver and bromide of potassium separately in small quantities of water; heat the white of egg in the remainder of the water, and strain. Then add, first the nitrate of silver, which determines a flocculent precipitate, then the bromide of potassium, agitating the liquid briskly. The precipitate dissolves, and an opalescent liquid is obtained, to which the syrup and the aromatic is to be added. The solution should be preserved in black glass bottles, excluded from the light.

This mixture has been given in comparatively large doses without producing any bad symptoms. Its absorption is easy and rapid; it does not stain the skin; the metallic taste is scarcely perceptible; the dose may be accurately apportioned, and it undergoes no decomposition by the substance met with in the stomach. (*Journ. de Pharm.* Aug. 1865, p. 130.)

On Arnica Plaster, U. S. P. (Orth.)

The officinal arnica plaster of the U. S. Pharmacopœia is as follows:—

Alcoholic Extract of Arnica, a troy ounce and a half.

Resin Plaster, three troy ounces.

Add the extract to the plaster, previously melted by means of a water-bath, and mix them.

On application at the ordinary temperature of the skin, the above is softer than is desirable; Mr. Orth gives the following as an improvement:—

Alcoholic Extract of Arnica (made from the flowers), a troy ounce.

Resin Plaster, two troy ounces.

Burgundy Pitch, half a troy ounce.

Melt the resin plaster and pitch together in a water-bath, add the extract, and mix thoroughly.

This plaster is uniform in texture, spreading quite as readily as the officinal one, and is of a more desirable consistence. (Amer. Journ. Pharm. July, 1865.)

Cochineal Colouring. (Dickson.)

Cochineal colouring may be prepared without admixture of potash, alum, etc., as follows:—

Take of Cochineal in powder	1 oz.
Spirit of Wine	2 oz.
Water	6 oz.
Liq. Ammon. Fort. q. s. .	(About ℥viij.)

Mix the spirit and water, and in 3 ounces of the mixture, heated to near the boiling-point in a flask, infuse the cochineal for fifteen minutes. Pour the infusion into another vessel, and repeat the process with 3 ounces more of the mixed spirit and water, and a third time with the remaining 2 ounces. Lastly, add sufficient Liq. Ammon. Fort. (about ℥j to 3j) to change the infusion to the desired tint.

The objections to the use of carbonate of potash, alum, etc, are, 1st, the colouring-matter is thrown down as a lake, and after some time, forms a layer at the bottom of the containing vessel, requiring the addition of ammonia to redissolve and keep it in solution; and 2nd, it does not keep well. On the other hand, the advantages of this preparation are:—1st, the colouring-matter remains in solution; and 2nd, it keeps well, and has no unpleasant odour. (Pharm. Journ. vol. vi. p. 434.)

Cochineal Colouring. (Church and Biggs.)

Mr. Church objects to the formula of Dr. Dickson, given above, on the ground that on exposure the ammonia evaporates, leaving the liquid of a dirty-brown colour. This would render it unfit for use in jellies. He also found that citric acid added to the solution turned it an orange-yellow, thus rendering the colouring objectionable in the case of jellies used with lime-

juice. Mr. Church uses the old form, adding 4 drachms of common salt to 8 ounces of the colouring, which he finds sufficient to preserve it for any length of time.

Mr. Biggs confirms the above observations, and adds a form which he affirms will produce a colouring remaining bright for any length of time, and throwing down no precipitate, and almost unalterable by contact with acids or alkalies:—

Take of Cochineal in powder,	
Carbonate of Potash,	
Bitartrate of Potash,	
Alum,—of each	1 oz.
Water	7 oz.
Spirit of Wine	1 oz.

Boil together in glazed vessel until the effervescence ceases (about ten minutes); when cold, pour on a filter and wash with water, to make up 8 ounces fluid. In this liquid dissolve an equal weight of refined sugar by means of sufficient heat, and set aside for use. (Pharm. Journ. vol. vi. p. 552.)

Cochineal Colouring. (Palmer.)

Best Carmine	1 oz.
Liq. Ammon. Fort. q. s., about . .	6 oz.

Macerate for a few days, and when the carmine is dissolved, *gently* heat the mixture so as to drive off the excess of ammonia, taking care not to carry it too far, so as to precipitate the carmine. Put this into a wine quart bottle, add—

Sp. Vin. Rect.	4 oz.
Sacch. Alb.	3 lb.

Then fill up the bottle with warm water, and shake it occasionally, till the sugar is dissolved.

The author has tried all the other forms, and found objections to them. The above he has used with the most perfect success. (Pharm. Journ. vol. vi. p. 615.)

Preparations of Cubebs and Copaiva. (Beyran.)*Compound Powder of Cubebs.*

Cubebs in powder 100 grammes.

Bicarbonate of Soda 5 „

White Sugar 150 „

Essence of Peppermint 5 „

Mix and divide into 15 powders. One at morning, noon,
and night.

In inflammation of urethra.

Another:—

Cubebs in powder 100 grammes.

Subnitrate of Bismuth,

Levigated Chalk,—ää 5 „

Same as above.

Antispasmodic Powder.

Cubebs in powder 40 grammes.

Belladonna,

Camphor,—ää 1 „

Mix and divide into 20 powders.

In neuralgic spasms, etc. (Journ. Chim. Méd.)

Pills of Terchloride of Gold.

Terchloride of Gold 7 grs.

Chloride Sodium 2 grs.

Glycerine 8 drops.

Starch 40 grs.

Dextrine 10 grs.

Water q. s.

Mix and divide into 80 pills.

The addition of dextrine is necessary for the formation of the pills, whilst unbroken starch granules are perhaps less acted upon than any organic material. The addition of an excess of chloride of sodium, from its producing the double salt of chloride of sodium and gold, gives greater stability.

Dose of chloride of gold, from one-twentieth to one-fifteenth of a grain. In syphilis, scrofulous and herpetic affections. (Dub. Med. Press, June 28, 1865.)

Musculine. (Reveil.)

Raw meat is sometimes prescribed in certain forms of diarrhoea. It is administered in the following form at the hospital for infants at Paris :—

Marmalade of Musculine.

Raw Fillet of Beef	100 grammes.
Powdered Sugar	20 „
Chloride of Sodium	1½ „
Chloride of Potassium	½ „
Black Pepper	½ „

The meat is carefully deprived of fat and sinew, cut up fine, disintegrated in a wooden mortar, and the powders added.

Syrup of Musculine.

Lean Veal deprived of fat, and minced	100 grammes.
Water	500 „
Pure Hydrochloric Acid	½ „
Chloride of Sodium	½ „
Chloride of Potassium	½ „

Mix and frequently agitate; after twelve hours' contact, strain, and filter; add sufficient water to make up to, 500 grammes of liquid, and then dissolve in it 1000 grammes of sugar at a temperature of 35° C.

Lozenges of Musculine. (Guichon.)

The author prepares pastiles of musculine with dried fillet of beef; each pastile contains about 3 grammes of meat; the taste is completely disguised, and infants take them without repugnance. (Journ. de Pharm. March 1865, p. 222.)

Essence of Mustard.

Olei Sinapis Essent.	1 part.
Sp. Vini Rect.	60 parts.

This forms a good substitute for mustard-poultice, and may be used in all cases where the application of mustard is indicated.

It should be sparingly sprinkled on piline and applied to the

part; the expedition with which it may be applied, and the rapidity of its action are manifest advantages. (Pharm. Journ.)

Morphia Collodion. (Caminiti.)

Elastic Collodion 30 parts.

Hydrochlorate of Morphia . . . 1 „

Applied to the affected parts in obstinate neuralgia. (Journ. Chim. Méd. June, 1865.)

Oxygenated Saline Waters. (Richardson.)

Dr. Richardson recommends solutions combining peroxide of hydrogen (containing ten volumes of oxygen) with various saline substances, and especially with salts of iron. These waters when properly diluted, are almost tasteless. The water containing the sulphate of iron is one of the best chalybeate aperients used. The form is as follows:—

Peroxide of Hydrogen 1 oz.

(10 vols. of Oxygen.)

Sulphate of Potash 2 grs.

Chloride of Sodium 1½ oz.

Sulphate of Iron 12 grs.

Simple Syrup 1 oz.

Water to 24 oz.

Dose, 2 fluid ounces to be taken with as much water as will fill a tumbler. Each dose contains a grain of the iron salt. (Proceedings of the Brit. Med. Assoc. 1865.)

Formulæ for Preparations of Pepsine. (Reveil.)

M. Vincer gives the following as the most useful of the many forms in which pepsine is employed:—

1. *Elixir of Pepsine.*

Elixir of Garus 30 grammes.

Syrup of Cherries 40 „

Distilled Water 80 „

Starch Pepsine 10 „

Dissolve the pepsine in the water, filter, and add the elixir

and syrup. Dose, 1, 2, or 3 tablespoonfuls twice during the meals.

2. Elixir of Pepsine. (Corvisart.)

Elixir of Garus	150 grammes.
Starchy Pepsine	10 „

Saturate the pepsine with the elixir; macerate for half an hour in a covered vessel, and filter through paper previously moistened. Dose, 1 tablespoonful before or during meals.

3. Compound Elixir of Pepsine.

Elixir of Garus	150 grammes.
Syrup of Cherries	300 „
Starch Pepsine	30 „

Mix as previously directed. Dose, 1 tablespoonful before or during meals.

4. Elixir de Pepsine. (Mialhe.)

Starchy Pepsine	6 grammes.
Distilled Water	24 „
White Wine (Lunel) . . .	54 „
Sugar	30 „
Proof Spirit	12 „

Macerate until the sugar is entirely dissolved; filter. This elixir has an agreeable taste, and is taken without reluctance. Dose, same as preceding.

5. Pepsine Wine.

Starchy Pepsine	10 grammes.
Wine (Lunel)	200 „

Macerate and filter.

6. Syrup of Pepsine. (Corvisart.)

Syrup of Cherries	150 grammes.
Starchy Pepsine	10 „

Heat the syrup to 20° or 25° C. Mix with the pepsine; leave in contact for half an hour; filter.

7. Pepsine Pills. (Boudault, Holtot.)

Starchy Pepsine	10 grammes.
Powd. Tragacanth	q. s., for 60 pills.

Dose, three pills at the commencement, and three after, and sometimes three during the meal.

8. *Pepsine Pills.* (Hogg.)

Starchy Pepsine	10 grammes.
Nitrate of Bismuth	5 „
Lactic Acid	2½ „

Mix and divide into 100 pills; coat with sugar and balsam of tolu. Dose, 4 to 12 pills one hour after meals.

9. *Pills of Pepsine and Iodide of Iron.*

Starchy Pepsine	10 grammes.
Iodide of Iron in crystals . .	5 „
Syrup	q. s.
Divide into 100 pills; coat with—	
Reduced Iron	10 grammes.
Finish with the sugar-coating, as No. 8.	

10. *Pepsine and Iron Pills.* (Hogg.)

Starchy Pepsine	10 grammes.
Gentian Powder	5 „
Syrup	q. s.
Divide into 100 pills; coat with—	
Reduced Iron	25 grammes.
Finish with sugar, etc., as preceding.	

11. *Copaiba and Pepsine.* (Ricord et Favrot.)

Balsam of Copaiba	270 grammes.
Neutral Pepsine	60 „
Nitrate of Bismuth	12 „
Calcined Magnesia	18 „
Divide into 600 capsules. 15 to 18 daily.	

(Formule Raisonnée des Médic. Nouveaux, etc., translated by F. Vincer; Pharm. Journ. vol. vii. p. 112.)

Medicated Pessaries and Suppositories, with Coco Butter as an Excipient. (Simpson.)

Professor Simpson brought under the notice of the Edinburgh Obstetrical Society some changes that had been made in the form and composition of medicated pessaries, and threw out some suggestions as to the more extended employment in practice of various kinds of suppositories. He has been in the habit

for many years past of applying different kinds of medicated pessaries to the cervix uteri in the treatment of uterine disorders; having been led to their use by finding that bromide and iodide of potassium, and many other substances, could thus be administered locally, which were of no avail in the form of a lotion. Pessaries have not yet found an acknowledged place in the Pharmacopœia; but that does not interfere with their usefulness. Up to a recent date, Professor Simpson has been in the habit of using pessaries composed of simple ointment, with the special drug rubbed up in it, made into a globular shape, and stiffened on the surface by being dipped in some warm melted ointment in which the proportion of wax largely predominated. But, latterly, Messrs. Duncan, Flockhart, and Co., of Edinburgh, have made them for him of coco butter, which presents this great advantage over the old ointment, that it is much more consistent and firm when cold, whilst it melts at a lower temperature, and with greater rapidity. In consequence of this greater solidity of the coco butter, it is found that pessaries made of that substance are more easily employed by the patients themselves than the softer and more yielding ointment balls; and the facility of introduction is still further promoted by having them made not spherical, but conical,—almost precisely of the shape of a Minié bullet.

Atropine (Belladonna)	. Sedative	$\frac{1}{10}$ gr.
Opium	„	2 grs.
Morphia	„	$\frac{1}{2}$ gr.
Bismuth, Oxide . . . . .	. Cicatrizing and Emollient	15 grs.
Borax	„ „	15 grs.
Zinc, Oxide	„ „	15 grs.
Tannin . . . . .	. Astringent	10 grs.
Alum	„	15 grs.
Alum and Catechu	„	15 grs. of each.
„ Iron	„	10 grs.
Acetate of Lead	„	7 $\frac{1}{2}$ grs.
„ „ and Opium	„	5 grs. 2 gr. Opium.
Matico	„	10 grs.
Sulphate of Iron (dried)	„	10 grs.

Gallic Acid	„	10	grs.
Perchloride of Iron . .	Hæmostatic	5	grs.
Persulphate of Iron . .	„	5	grs.
Sulphate of Zinc (dried) .	Caustic	10	grs.
Carbonate of Soda . . .	Antacid	15	grs.
Carbolate of Lime . . .	Deodorant	5	grs.
Iodide of Lead	Alterative and Resolvent .	5	grs.
„ „ and Atropine . . .	„	5	grs. $\frac{1}{30}$ Atropine.
„ „ Potassium	„	10	grs.
Bromide of Potassium . .	„	10	grs.
Mercurial	„	30	grs. (<i>Ung. Hydr.</i>)

Many of the pessaries are made with morphia ($\frac{1}{2}$, 1, or 2 grains) in them, to suit cases where a sedative is also required. They are also sometimes made hollow in the centre, to allow of a few drops of chloroform liniment being introduced along with them. Various other kinds of pessaries are made.

Besides being useful in the manufacture of pessaries, coco butter will be found invaluable as a medium for the administration of medicinal substances by the rectum. The ordinary suppository mass is apt to be either so soft as to be difficult of introduction through the anus, or so firm in its consistence as to be very slow of solution; and the result in some cases is, that either the medicine is imperfectly applied, or the suppository is so long of dissolving, that the drug has not the opportunity of exerting its specific action at a sufficiently early period. These drawbacks to the use of suppositories are quite done away with when they are made with coco butter, which is at once firm and fusible.

Aloine (with Soap) . . .	1 gr., 5 grs. Dry Soap.
Belladonna	$\frac{1}{2}$, 1, and 2 grs. (<i>Ext. Bellad.</i>)
Bismuth, Oxide	10 grs.
Borax	5 grs.
Copper, Acetate of . . .	2 grs.
Elaterium	$\frac{1}{2}$ gr.
Ergot of Rye	2 drops Oil.
Gall and Opium	5 grs. and 1 gr.
Gamboge	5 grs.
Henbane	5 grs. (<i>Ext. Hyoscy.</i>)

Iron, Alum	3 grs.
„ Persulphate	2 grs.
Mercurial	6 grs. (<i>Ung. Hydrarg.</i>)
Morphia	$\frac{1}{4}$, $\frac{1}{8}$, $\frac{1}{2}$, 1, $1\frac{1}{2}$ and 2 grs.
Opium	2 grs.
Podophyllin	1 gr.
Santonine	5 grs.
Soda, Hyposulphite of . .	5 grs.
Tannin	5 grs.
Zinc, Oxide	10 grs.
„ Sulphate (dried) . .	3 grs.

(Edinburgh Medical Journal, May, 1865.)

Preparations of Phenic Acid and the Phenates.

Solution Phenic Acid.

Phenic Acid	1 part.
Water	1000 „

Seldom employed internally. Dose, a spoonful. Injected into the vessels as a disinfectant.

Solution Sulphate Alumina and Phenic Acid. (Lemaire.)

Concentrated Sol. Sulphate Alumina, 30° Baume .	1000 parts.
Phenic Acid	5 „

A caustic disinfectant. A spoonful of this solution in a quart of water constitutes an efficient disinfectant.

Solution Phenate of Soda. (Babœuf.)

Phenate of Soda	10 grammes.
Eau	1 quart.

For arresting hæmorrhage and dressing wounds.

Ointment of Phenate of Soda. (Babœuf.)

Phenate of Soda	10 grammes.
Lard	100 „

Mix. In acute and parasitic affections.

Alcoholic Solution Phenic Acid. (Lemaire.)

Alcohol, 90°	1 part.
Crystallized Phenic Acid .	1 „

Employed in gangrenous wounds, bites of venomous animals, etc.

Phenic Acid and Glycerine. (Lemaire.)

English Glycerine . . . 100 parts.

Phenic Acid 1 „

Mix. In impetigo, chronic eczema, etc. The glycerine may be replaced by glycerole of starch.

Phenic Ether.

Sulphuric Ether 100 parts.

Phenic Acid 1 „

In Catarrh.

Phenic Dentifrice Water. (Lemaire.)

Pure Phenic Acid 10 parts.

Tincture of Quillay Bark . 50 „

Essence of Peppermint . . 1 „

Aqua Fort. 1 quart. M.

A spoonful to be added to a quart of water. The acid destroys the animalcula, and disperses bad odours of the breath. (Journ. Chim. Méd. May, 1865.)

Phenic Vinegar. (Quesneville.)

Acetic Acid (5°) 900 grammes.

Powdered Camphor 5 grammes.

Crystallized Phenic Acid . . 100 grammes.

This combination of three antiputrescents is said to be extremely useful, and for hygienic purposes far superior to *the vinegar of four thieves*. It has been used a good deal on board ship, to keep the cabins of sick persons sweet. (Moniteur Scientifique, 1865, p. 515.)

Vinon's Syrup of Quinine.

White Spanish Wine 500 parts.

Sugar 500 „

Alcoholic Extract of Quina, 15 quinine to the gramme . 10 „

1 kilo. of syrup represents 1.50 sulphate of quinine.

100 grammes 0.15 „

1 gramme 0.010 „

Red Drops. (Lecomte.)

Camomile	60 parts.
Saffron	2 „
Cloves	1 „
Canella	1 „
Opium	8 „
Alcohol	300 „

Macerate during eight days. Express and filter.

5 to 10 drops in an appropriate infusion. Employed in France in choleric diarrhœa. (L'Union Pharmaceutique, October, 1865.)

To Silver Glass. (Bothe.)

1. The reducing liquid. Into 48 ounces of boiling water throw 48 grains of Seignette salt (sodæ pot. tart.), and add gradually a solution of 1 drachm of nitrate of silver in 1 ounce of water. Keep it boiling for ten minutes, and filter when cold.

2. Dissolve 1 drachm of nitrate of silver in 1 ounce of distilled water, and add liquid ammonia till the precipitated oxide is just redissolved, then add 12 ounces of water, and filter.

A mixture of equal volumes of these two liquids coats glass, in the course of ten minutes, with a bright, shining layer of silver. (Wittstein's 'Vierteljahresschrift für Pharmacie,' 107, xiv.)

To Remove Silver Stains from Linen. (Bouillard.)

Dissolve 10 grms. of cyanide of potassium in 125 grms. of water, and at the moment of using add 20 drops of tincture of iodine. Put a little of this solution on the linen, and rub between the fingers. The silver stain, however old, will be removed. (Journ. de Chim. Méd. Oct. 1865, p. 588.)

Preparations of Tannate of Manganese. (Marletta.)

Signor Marletta considers the tannate of manganese to be the best salt combining tonic, astringent, and antiseptic properties.

The great advantage of this combination of tannin with manganese is its great solubility, the other metallic tannates being insoluble.

Signor Marletta adopts the following formulæ:—

Antiseptic Pills.

Tannate of Manganese . . . 25 centigrammes.

Conserve of Roses . . . q. s.

M., f. 20 pills.

Syrup of Tannate of Manganese.

Tannate of Manganese . . . 5 centigrammes.

Syrup of Roses 26 grammes.

Mix.

Lozenges of Tannate of Manganese.

Tannate of Manganese . . . 3 parts.

Sugar 300 „

Mucilage of Gum Tragacanth . 95 „

Essence of Roses *ad gratiam*.

Mix, and make into lozenges of a gramme each.

Ointment of Tannate of Manganese.

Tannate of Manganese . . . 20 centigrammes.

Cold Cream 32 grammes.

Mix.

Applied to bad wounds.

Collyrium of Tannate of Manganese.

Tannate of Manganese . . . 5 centigrammes.

Rose Water 65 grammes.

Pure Glycerine 13 „

Mix.

In catarrhal affections of the eyes.

Injection of Tannate of Manganese.

Tannate of Manganese . . . 6 decigrammes.

Rose Water 260 grammes.

Pure Glycerine 52 „

Mix.

(Journ. Chim. Méd. July, 1865.)

Collyrium of Sulphate of Zinc and Morphia. (Guersant.)

Distilled Water 30 grammes.
 Sulphate of Zinc,
 Sulphate of Morphia,— $\frac{ss}{ss}$. . . 5 centigrammes.
 Rép. de Pharm. Mars, 1865.

Tooth Cement. (Stehle.)

Gutta Percha 5 parts.
 White Wax 1 part.
 Oil of Cloves a few drops.

(Wittstein's Vierteljahresschrift f. Pharmacie, p. 2. xiv.)

Another (Sorel):—

A light oxide of zinc is prepared by moistening the ordinary oxide with nitric acid, and then igniting it. Thus prepared, it is made into a soft paste with a solution of chloride of zinc, having a specific gravity 1·9 or 2·0. This soft mass speedily acquires great hardness, which it permanently preserves. If a grey colour is required, the least trace of carbon may be used, got by holding the pestle with which the paste is made over the gas for a moment. A trace of sulphide of cadmium will produce a yellow tint. (Neues Repertorium, vol. xiii. p. 552.)

Paste for Destroying Tooth Pulp. (White.)

Arsenious Acid. 30 grains.
 Sulphate of Morphia. . . . 20 „
 Creasote q. s.

Mix.

Put the arsenic and creasote into a glazed mortar, and grind them until the arsenic becomes impalpable, add the sulphate of morphia and more creasote, sufficient to dissolve the morphia and to create a paste.

May remain in the cavity from twenty-four to forty-eight hours. ('Dental Review,' April, 1865, p. 128.)

THERAPEUTICAL NOTES.

Subcutaneous Injection of Quinine in Ague, etc. (Desvignes.)

The use of quinine and arsenic administered in the usual manner having failed, M. Desvignes resolved to try the subcutaneous injection of quinine in cases of intermittent fever. He employed a solution of $1\frac{1}{2}$ grain in 15 drops of water, acidulated with a drop of nitric acid. The treatment was most successful. (Paper, Royal Med. and Chirurg. Soc. Jan. 10.)

Dr. Stewart recommends that the quinine be replaced by cinchonine, as being cheaper and as effectual; 5 grains of cinchonine equal 4 of quinine.

Doses of Various Alkaloids, etc., used in Subcutaneous Injections. (Jouasset.)

Morphia, Hydrochlorate.

Commence with 5 to 10 milligrammes up to 50 milligrammes, according to the degree of tolerance.

Strychnia.

To be used with great caution, and to be continued in progressive doses of 2 to 5 milligrammes up to 10 milligrammes.

Aconitine.

Acts energetically in doses of $\frac{1}{2}$ to 2 milligrammes. It is not prudent to go beyond this quantity.

Sulphate of Quinine.

(Acid solution, acidulated with some drops of sulphuric acid.)
From 10 to 15 centigrammes.

Veratria, Nitrate.

From $\frac{1}{2}$ to 1 milligramme. Dangerous and but imperfectly studied.

Nicotine.

4 drops of a solution of 25 milligrammes of nicotine in 7 grammes of water. Employed with success by Erlenmeyer.

Ergotine.

3 to 6 milligrammes per day, in a mixture of alcohol and glycerine. Employed by Eulenberg in a case of obstinate convulsive cough in an infant of three years.

Caffeine.

From 1 to 2 centigrammes. In headache.

New Anæsthetic, Chlorocarbon. (Simpson.)

Dr. J. Y. Simpson, Professor of Medicine and Midwifery in the University of Edinburgh, has proposed the use of bichloride of carbon (C_2Cl_4) as an anæsthetic. This substance is produced by passing the vapour of bisulphide of carbon together with chlorine through a red-hot porcelain tube. There results from this process a mixture of chloride of sulphur and bichloride of carbon; the former of these is removed by the action of potash. Dr. Simpson proposes *Chlorocarbon* as the pharmaceutical name for bichloride of carbon.

Dr. Simpson states that the primary effects of this substance are very analogous to those of chloroform, but it takes a longer time to produce the same degree of anæsthesia, and generally a longer time to recover from it. Its depressing influence, however, is greater, and it is therefore more dangerous to employ generally.

Chlorocarbon, when applied externally to the skin, acts much less as a stimulant and irritant than chloroform, and will hence, in all likelihood, be found of use as a local anæsthetic in the composition of sedative liniments. (Med. Times and Gaz. Dec. 16, 1865.)

On Iodoform. (Righini.)

Dr. Righini, in a pamphlet recently published, gives the results of some experiments upon the physiological and therapeutic qualities of iodide of formyle. He found it to possess anæsthetic, antiseptic, and antimiasmatic qualities. When administered slowly and continuously, it causes excess of secretion from the liver, the lungs, the salivary glands, and the loins, the patient growing fat, rather than the reverse, as when iodine is used. Iodoform may be given, without danger, in large doses, which may be gradually raised to 3 grammes per day. Very large doses, however, cause symptoms of iodism. (Iodoform Nogosie, etc., pamphlet.)

Medicinal Use of Anthracite Coal. (Dyés.)

Dr. Dyés has come to the conclusion that coal exercises a favourable action on the functions of the liver, spleen, and pancreas. He gives it in fine powder, in doses of fifteen to thirty grains a day, incorporated in the pulp of prunes, or in pills mixed with the extract of ox gall, or with extracts of quassia, valerian, etc. (Rev. Thérap. Méd. Chir.; Dublin Med. Press, Sept. 13, 1865.)

Chlorate of Potash in Bronchitis. (Laborde.)

Dr. Laborde has been most successful in the use of chlorate of potash in cases of acute bronchitis. He recommends a dose of $2\frac{1}{2}$ drachms in the twenty-four hours, given in a pretty large quantity of fluid, owing to its sparing solubility. (Bull. Gén. de Thérap.; Medical Press, Feb. 1, 1865.)

Cream of Tartar in Diabetes. (Betoldi.)

Dr. Betoldi saturates the drink (lemonade, etc.) of diabetic patients with cream of tartar, and finds that he need not then deprive them of amylaceous food. (Wittstein's Viert. für prak. Pharmacie, p. 417. xiv.)

Creasote in Lycosis. (Masse.)

Dr. Masse uses 50 centigrammes of creasote in combination with water and spirit, of each 50 grammes, applied as a lotion for the purpose of arresting the development or formation of parasitic spores in diseases of the skin. (*Gazette des Hôpitaux*; *Med. Press*, Feb. 1, 1865.)

Citric Acid in Phosphatic Gravel. (Keyes.)

Although it is stated in books that citric acid only aggravates the above complaint, Dr. Keyes found that it suddenly checked it. The phosphatic diathesis was completely overcome, without resorting to other means. (*Philadelphia Med. Reporter*; *Dub. Med. Press*, Sept. 20, 1865.)

Pancreatine. (Dobell.)

Dr. Dobell has used this substance in the treatment of a number of cases. It is a substance of an oily-like nature, got from the pancreas, or sweetbread of animals. It possesses the property of converting fats into an emulsion with water. It is itself administered in the form of an emulsion. (*Lancet*, Sept. 10 and Nov. 11 and 18, 1865.)

Curare in Epilepsy.

Curare is therapeutically employed in Vienna as a subcutaneous injection about the nape of the neck in epilepsy, with decided success. The dose is $\frac{1}{15}$ th to $\frac{1}{10}$ th of a grain. (*Vorwerk, Neues Jahrb. f. Pharmacie*, p. 174. xxiii.)

Ether as an Anthelmintic. (Lortet.)

M. Lortet proposes to destroy worms by anæsthesia. Repeated experiments upon animals and men have been attended with the same results,—the expulsion of tæniæ, which have been passed without pain, entire, or nearly so, and always with the cephalic end uninjured. The dose of ether is sixty grammes, in capsules

or mixed with syrup, followed in two hours by an ounce of castor oil. (Gaz. Méd. de Lyon, Jan. 1, 1865; Brit. Med. Journ., Jan. 21, 1865.)

Action of Digitalis and Ergot combined. (Ronayre.)

Dr. Ronayre has found that a combination of ergot and digitalis produces marked effects in certain diseases. He commenced with 10 and 15 drop doses of tinctures of ergot and digitalis combined. He thinks a good deal of efficacy of the medicines depends on the mode of preparing the tinctures. He finds that in preparations where the activity of the medicine depends on the presence of fixed and volatile oils, these are destroyed in the processes of infusion or decoction, while the inspissation of an extract completely volatilizes the essential oils. He therefore prefers the use of tinctures in such cases. (Dub. Med. Press, Oct. 25, 1865.)

Expectorant Electuary.

Narbonne Honey	100 grammes.
Oxyiodide of Antimony . .	0.30 to 0.6 centigr.
Ipecacuanha Wine	2 to 4 grammes.

In œdema, bronchitis, etc. A spoonful in coffee every alternate hour. (Journ. Chim. Méd. Feb. 1865.)

Comparative Table of Alkalies used in the Acid Diathesis.
(Bence Jones.)

Lithia is taken as the standard of comparison:—

10 parts lithia = 12 parts ammonia.	
” ” = 14 ”	magnesia.
” ” = 19 ”	lime.
” ” = 21 ”	soda.
” ” = 33 ”	potash.
” ” = 54 ”	bismuth.
” ” = 25 ”	carb. lithia.
” ” = 27 ”	carb. ammonia.
” ” = 35 ”	carb. lime.
” ” = 37 ”	carb. soda.
” ” = 48 ”	carb. potash.
” ” = 70 ”	carb. bismuth.

In other words, 14 grs. of magnesia will neutralize as much acid as 25 grains of carb. lithia, or 48 grs. of carb. potash, or 70 grs. carb. bismuth. One grain of carb. lithia is nearly equal to a grain and a half of carbonate of soda, or 2 grs. carb. potash. (Med. Times, Feb. 25, 1865.)

Application of Ice in Disease. (Chapman.)

Dr. Chapman has been largely using ice in cholera, diarrhœa, sea-sickness, epilepsy, and other complaints. The ice is deposited in a bag, which is placed along the spine. (Medical Times, papers of various dates, 1865.)

Inhalation of Iodine in Coryza. (Luc.)

M. Luc recommends a method he used with success to relieve himself from the uncomfortable symptoms attendant upon a severe cold in the head. He inhaled tincture of iodine from a phial for one minute at a time, at intervals of about three minutes. The evaporation of the iodine was sufficiently promoted by the heat of the hand. (Journ. of Pract. Med.; Dublin Med. Press, Aug. 23, 1865.)

Iodide of Potassium as an Antilactescent. (Morris.)

Dr. Morris was induced to try iodide of potassium in arresting the secretion of milk, and in no instance has he been disappointed, even when belladonna failed to afford relief.

He gives three grains of the iodide in an ordinary saline draught, every three or four hours. (Amer. Journ. Med. Science; Dub. Med. Press, May 3, 1865.)

Tincture of Iodine in Saccharine Diabetes. (Berenger, Ferand.)

The author used the tincture of iodine of the French Codex, containing 8 parts to 100 of spirit, in diabetes, with success. He gave 5 drops, increasing to 20 drops, administered in 100 grammes of water. Although it is not pretended that this treat-

ment will effectually cure diabetes, it is contended that the exhibition of iodine causes a rapid diminution in the quantity of the diabetic sugar,—a very desirable result. (Bull. Gén. de Thérap.; Brit. and For. Med. Chir. Review; Dublin Medical Press, July 19, 1865.)

Perchloride of Iron in some Chronic Diseases. (Beale.)

Dr. Lionel S. Beale advocates the use of the aqueous solution of perchloride of iron in diseases of the urinary organs. He believes it to be as efficacious as the tincture, while at the same time it is cheaper. Dr. Beale is satisfied of the advantage of the presence of free acid, and in cases of irritable bladder uses the following combination; in this case, however, substituting the tincture for the aqueous solution:—

	Brit. Pharm.
℞ Tr. Ferri Perchlor.	m℥ to ʒss.
Acid. Hydrochlor. dil.	m℥ to ʒss.
Tr. Hyoscyami	m℥ to ʒss.
Sp. Chloroform	ʒss.
Inf. Quassia ad	ʒj to ʒjss.
Mix. To be taken twice a day, at 11 and 4 o'clock.	

(Med. Times, Jan. 14, 1865.)

Inhalation of Lime Water in Croup. (Küchenmeister.)

The author states that diphtheric membranes are rapidly dissolved in lime water. The water is employed hot, and is applied by means of a pulverizer,—the treatment meeting with marked success. (Dub. Med. Press, Aug. 9, 1865.)

***Larica Papaya* (Papaw Fruit) as a Vermifuge.**

Dr. Viani, of the island of Réunion, recommends the juice of the *Larica Papaya* as one of the best vermifuges. Properly administered, it is perfectly harmless. It has succeeded where santonine has failed. (Rép. de Pharm.; Brit. Med. Journ. May 20, 1865.)

Dr. Dyce, of Aberdeen, confirms the above statement, and refers to a paper of his on the subject, which appeared in the London Medical Gazette, vol. xiii. p. 866, 1834.

Ointment in Alopecia. (Hardy.)

Beef Marrow	60 parts.
Castor Oil	30 „
Gallic Acid	3 „
Tincture of Rosemary	5 „
(Gaz. des Hôp.; Dub. Med. Press, Sept. 20, 1865.)	

Salts of Potash and Soda in Croup. (Volquarts.)

Bicarbonate of Soda,	
Nitrate of Soda,—ää . . .	5 decigrammes.
Gum Arabic	4 grammes.
Water	225 „

For an infant from one to three years. Take a spoonful in coffee every hour.

For a child of three to five years, the alkaline mixture is 4 grammes to 225 grammes of water, and gum 4 grammes.

Chlorate of Potash . . .	12 grammes.
Water	160 „
Gum Arabic	32 „

For an adult. Gargle. To be used lukewarm every half-hour or hour.

In the case of an infant, this gargle is replaced by the following preparation :—

Chlorate of Potash . . .	1 to 3 grammes.
Distilled Water,	
Syrup of Marsh Mallow,—ää	20 grammes.
A spoonful every half-hour.	

(Journ. de Chim. Méd. Feb. 1865.)

Phosphuretted Oil in Scabies. (Metzl.)

Dr. Metzl recommends the application of this oil. He makes

it by heating in a vessel closed by a membrane 2 drachms of phosphorus in a pint of olive oil, decanting when cold, so as to separate the undissolved phosphorus. (Brit. Med. Journ. Jan. 21, 1865.)

Seaweed Wine. (Tamplin.)

Mr. Tamplin confirms the statement of the 'Gazette Hebdomadaire de Paris,' that Seaweed Wine is preferable to all preparations of iodine, and perfectly safe in its administration in that large and oftentimes unmanageable class of cases understood by the term 'scrofula.' He found that this preparation met with the greatest success in the treatment of disease of the hip and other bones and joints in children. (Pharm. Journ. vol. vi. p. 435.)

Amount of Sugar contained in different Wine and Liquors.
(Bence Jones.)

The following table is given for the use of diabetic patients:—

	Amount of Sugar in an Ounce of Fluid.	
	Grs.	Grs.
In Sherry, the Sugar varied from	4 to	18.
Port " "	16 to	34.
Madeira " "	6 to	20.
Malmsey Madeira "	56 to	66.
Tokay " "	74.	

	Amount of Sugar in an Ounce of Fluid.	
	Grs.	Grs.
In Samos, the Sugar varied from	88.	
Paraxete " "	94.	
Cyprus " "	102.	
Champagne "	6 to	28.
Sweet Cider "	18 to	44.
Bitter Ale "	12 to	130.
Porter " "	23 to	40.
Stout " "	45 to	64.

Gin and absinthe contain no sugar.

(Med. Times, Jan. 28, 1865.)

Sulphite of Soda in Erysipelas. (Hewson.)

Dr. Hewson uses a solution of sulphite of soda as a local application in erysipelas, and in extensive trials of the remedy has never seen it fail. Before the cellular tissue has become invaded by the disease, he applies to the parts affected a solution of 10 grains of the salt to an ounce of water. Lint, wetted with the solution, is laid over the surface affected, and covered with oilskin to prevent evaporation. (Phil. Med. Reporter; Dublin Med. Press, Sept. 13, 1865.)

Sulphur in Lead Colic. (Guibout.)

M. Guibout having in two cases unsuccessfully used the usual remedies, gave sulphur in daily doses of 16 grammes, taken in honey or water. He met with success in both instances. (Bull. Génér. de Thér. Dec. 15, 1864.)

Tartarized Antimony in Uræmia. (Lange.)

Dr. Lange recommends tartarized antimony in uræmia. For adults, 30 centigrammes are dissolved in 150 grammes of water, and a teaspoonful is given every quarter or half-hour. The treatment has been generally successful. (Presse Méd. Belge; Bull. Génér. de Thér. Dec. 30, 1864.)

Solution of Venice Turpentine as a Dressing for Wounds.

(Kerner.)

M. Kerner has had ample experience in treating all kinds of wounds, and finds the following a most valuable as well as cheap application:—

Venice Turpentine . . .	2 lb. 8 troy oz.
Bicarbonate of Soda . .	6½ drachms.
Water	18 pints imperial.

Digest in a bath for six days, at a temperature not higher than 75° C., and then filter. It constitutes a highly soluble turpentine soap, which is very cheap, and evaporates slowly. A com-

press, consisting of eight folds of linen well soaked in the solution, is applied over the whole breadth of surface and left on (covered with oil-silk for twelve hours), being moistened by means of a sponge with some of the solution every four or five hours. (Bull. de Thérap.; Dub. Med. Press, Sept. 20, 1865.)

Shoe Soles in Ill-Smelling Feet. (Stanilas Martin.)

The diffusion of the abominable odour in ill-smelling feet may be effectually prevented by placing a sole containing a layer of powdered charcoal either between the foot and the stocking or between the latter and the shoe. A paste consisting of—

Powdered Charcoal . . .	40 parts,
Water	40 „
Gum	15 „

should be thickly spread over a piece of filtering-paper, flannel, felt, etc., stretched over a board or pasteboard. The paste is then covered over with another piece of paper, which is smoothed over with the hand so as to remove all asperities. When quite dry, the sole may be cut out of the required size. Being cheaply made, they may be changed once or twice a day. (Bull. de Thérap., vol. lxv. p. 143; Med. Times.)

LITERATURE.

LIST OF THE MORE IMPORTANT ENGLISH, FRENCH, AND GERMAN WORKS RELATING TO CHEMISTRY, PHARMACY, AND MATERIA MEDICA, PUBLISHED DURING THE YEAR 1865, WITH THE PRINCIPAL CON- TINENTAL AND AMERICAN JOURNALS.

- Manual of Materia Medica and Therapeutics.** Being an Abridgment of the late Dr. Pereira's Elements of Materia Medica, arranged in conformity with the British Pharmacopœia, and adapted to the use of Medical Practitioners, Chemists and Druggists, Medical and Pharmaceutical Students, etc. By Frederic J. Farre, M.D., etc.; Robert Bentley, M.R.C.S., F.L.S., etc., and Robert Warington, F.R.S., etc. London: Longmans and Co.
- The Dispensatory of the United States of America.** By George B. Wood, M.B., and Franklin Bache, M.D. Twelfth Edition, carefully revised. Philadelphia: Lippincott.
- Therapeutics and Materia Medica.** A Systematic Treatise on the Action and Uses of Medicinal Agents, including their Description and History. By Alfred Stille, M.D. Second Edition, revised and enlarged, 2 vols. 8vo. Philadelphia: Blanchard and Lea. London: Trübner.
- Thomson's Conspectus of the British Pharmacopœia.** Edited by Edward L. Birkett, M.D. New Edition. London: Longmans.
- A Dictionary of Chemistry and the Allied Branches of other Sciences;** founded on that of the late Dr. Ure. By Henry Watts, B.A., F.C.S., assisted by Eminent Contributors. Parts 12-22. London: Longmans and Co.
- Chemical Technology; or Chemistry in its Applications to the Arts and Manufactures.** By Thomas Richardson, M.A., etc., and H. Watts,

- B.A., etc. Second Edition. Vol. I., Part 4. London: Baillière and Co.
- Quantitative Analysis. By Professor Fresenius. Edited by J. L. Bullock and Arthur Vacher. Fourth Edition. London: Churchill.
- A Course of Practical Chemistry; arranged for the Use of Medical Students. By W. Odling, M.B., F.R.S., etc. Second Edition. London: Longmans.
- Practical Chemistry. By Stevenson Macadam, Ph.D., etc. London and Edinburgh: Chambers.
- Notes for Students: being a Syllabus of Chemistry and Practical Chemistry. Compiled from the Manuals of Miller, Fownes, Berzelius, Gerhardt, Gorup-Besanez, etc. By A. J. Bernays, etc. Fourth Edition. London: Churchill.
- A Treatise on Coal, Petroleum, and other Distilled Oils. By A. Gesner, M.D., F.G.S. Second Edition. Revised and enlarged by George W. Gesner. London: Baillière.
- Dublin International Exhibition of Arts and Manufactures: Reports of the Juries, and List of the Awards. Dublin.
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- The Prescriber's Analysis of the British Pharmacopœia. By J. Birkbeck Nevins, M.D. Third Edition. Revised and enlarged. London: Churchill.
- A Compendium of Domestic Medicine, etc. By John Savory. Seventh Edition. London: Churchill.
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- The Principles and Practice of Medical Jurisprudence. With 176 Wood Engravings. By Alfred S. Taylor, M.D., F.R.S. London: Churchill.

- Elements of Physics, or Natural Philosophy.** Written for General Use, in plain or non-technical language. By Neil Arnott, M.D., F.R.S. Sixth and Completed Edition. 2 Parts, 10s. 6d. each. London: Longmans.
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- Annuaire de Thérapeutique de Matière Médicale, de Pharmacie et de Toxicologie pour 1865.** Par A. Bouchardat. Paris: Baillière. 1 fr. 25 c.
- Manuel de Matière Médicale, de Thérapeutique et de Pharmacie.** Par A. Bouchardat. Paris: Baillière. 2 vols. 14 fr.
- Annuaire Pharmaceutique, ou Exposé Analytique des Travaux de Pharmacie, Physique, etc.** Par O. Reveil. Paris: Baillière. 1 fr. 50 c.
- Traité des Champignons au Point de Vue Botanique, Alimentaire et Toxicologique.** Par l'Abbé Morel. Paris: Baillière. 4 fr. Fig. color. 8 fr.
- Revue Pharmaceutique, Supplément à l'Officine.** Par Dorvault. Paris: 7, Rue de Jouy. 1 fr. 25 c.
- L'Année Pharmaceutique, ou Recueil des Remèdes Nouveaux et Revue des Travaux les plus Importants qui ont paru en 1864.** Par L. Parisel. Paris. 1 fr. 50 c.
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- Histoire Naturelle et Médicale des Nouveaux Médicaments introduits dans la Thérapeutique depuis 1830 jusqu'à nos jours.** 2^e édition. Par F. Guibert. Paris. 10 fr.
- Aide-Mémoire de Chimie, à l'Usage des Lycées et des Etablissements Secondaires.** Avec Atlas de 14 planches. Par P. A. Favre. Paris: V. Masson. 8 fr.

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- Des Quinquinas. Par Gustave Planchon. Paris : Savy. 3 fr. 50 c.
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Proceedings of the Academy of Natural Sciences. Philadelphia.
American Journal of Science and Arts. New Haven, Connecticut.
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Proceedings of the American Academy of Science and Arts.

LIST OF THE PRINCIPAL FRENCH AND GERMAN MEDICAL, CHEMICAL, AND PHARMACEUTICAL PERIODICALS.

[One or two shillings must be added to the Subscription price, to pay for postage, etc.]

Annalen der Chemie und Pharmacie. Herausg. von F. Woehler, J. Liebig und H. Kopp. Leipzig. Monthly. £1. 1s. per ann.

Annalen der Physik und Chemie. Herausgegeben von Poggenдорff. Leipzig. Monthly. £1. 8s. per ann.

Annales de Chimie et de Physique. Paris. Monthly. £1. 10s. per ann.

Annales d'Hygiène Publique et de Médecine Légale. Paris. Quarterly. 18s. per ann.

Annales des Sciences Naturelles, comprenant la Zoologie, la Botanique, l'Anatomie et la Physiologie Comparée des deux règnes et l'Histoire des corps organisés fossiles. Paris. Monthly. Both divisions. £1. 18s. per ann.

Each division separately. £1. 5s. per ann.

Annales du Conservatoire Impérial des Arts et Métiers. Paris. Quarterly. 16s. per ann.

Annales du Muséum d'Histoire Naturelle de Paris. Paris. Quarterly. £2 per ann.

Annales Générales de Médecine. Paris. Monthly. £1 per ann.

Annales Médicales Belges. Paris. Monthly. 14s. per ann.

Annales Médico-Psychologiques. Journal destiné à recueillir tous les Documents relatifs à l'Aliénation Mentale et à la Médecine Légale des Aliénés. Paris. Bimonthly. £1 per ann.

Archiv für Anatomie, Physiologie und wissenschaftliche Medicin. Herausg. von Reichert und E. Du Bois Reymond. Leipzig. Bimonthly. 18s. per ann.

Archiv der Heilkunde. Red. E. Wagner. Leipzig. Bimonthly. 12s. per ann.

- Art (L') Médical.** Journal de Médecine générale et de Médecine pratique. Paris. Monthly. 15s. per ann.
- Archiv der Pharmacie.** Herausg. von L. Bley u. H. Ludwig. Hannover. Monthly and Bimonthly.
- Bulletin de l'Académie Impériale de Médecine.** Paris. Twice a month. 15s. per ann.
- Bulletin de la Médecine et de la Pharmacie Militaires.** Paris. Monthly. 12s. per ann.
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- Correspondenzblatt der Deutschen Gesellschaft für Psychiatrie und gerichtliche Psychologie.** Neuwied. Bimonthly. 6s. per ann.
- Cosmos.** Revue Encyclopédique Hebdomadaire du progrès des Sciences et de leur application aux Arts et à l'Industrie. Paris. Weekly. £1 per ann.
- Flora, oder Allgemeine Botanische Zeitung.** Redact. Dr. Herrich-Schäffer. Regensburg. Weekly. 12s. per ann.
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- Henke's Zeitschrift für die Staatsarzneikunde, fortgesetzt von Dr. Behrend.** Erlangen. Quarterly. 13s. per ann.

Institut (L'). Journal universel des Sciences et des Sociétés savantes en France et à l'Étranger.

1st Section : Sciences Mathém., Physiques et Naturelles. Weekly. £1. 10s. per ann.

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Journal de Pharmacie et de Chimie. Paris. Monthly. 15s. per ann.

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Journal des Mines, de la Métallurgie et des Eaux et Forêts. Paris. Weekly. £1 per ann.

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L'Union Pharmaceutique. Par Dorvault. Paris. Monthly.

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Repertorium für Thierheilkunde. Herausg. von Prof. E. Hering. Stuttgart. Quarterly. 6s. per ann.

- Revue et Magasin de Zoologie pure et appliquée. Paris. Monthly.
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- Revue des Cours Scientifiques : Physique, Chimie, etc. Paris. Weekly.
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- Revue (La) Médicale Française et Étrangère. Journal du progrès de
la Médecine hippocratique. Paris. Twice a month. £1 per ann.
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Red. Dr. Richter und Dr. Winter. Leipzig. Monthly. £1. 16s.
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